

Western Industry

June 1956
3rd annual
plant maintenance
& engineering
issue

ring industrial tanks and pipes on the spot with epoxy resin and Fiberglas is one
ication idea. Tank pictured cost \$900 to repair earlier, but plastics did the job for only \$

Lubrication Know-how Revealed

Ten ways that Western plants are using new lubricants and lube equipment to save time and production costs are unveiled in the June *Western Industry*.

The unusual case histories are accompanied by a listing of 30 lubrication manuals that the publication's readers can receive free.

Spare Parts Problems in West Probed

SAN FRANCISCO, June 10—The headaches Western plants have in keeping up correct inventories and in obtaining plant operating parts fast when they are needed is the subject of two special articles in the June *Western Industry*.

Methods used by two Western plants who have successfully developed programs to meet the West's equipment replacement needs are detailed.

Special Report Out

Western Plants Told How to Use New Plastic Materials

SAN FRANCISCO, June 10—Hundreds of uses for plastic panels, rods, sheets, and tubes for maintenance and production in Western plants are pinpointed in a special report published today by *Western Industry*.

Asserting that hardly one Western plant in every 100 is taking full advantage of this remarkable family of materials, the report gives Western industrial purchasing agents, plant engineers, and maintenance men the facts they need to start buying and using plastics.

Features of the report, in addition to "how to use" details, are: a comparison of plastics' characteristics to conventional materials such as steel, glass, and wood; a listing of latest and best "know-how" literature available from manufacturers and distributors; and a directory of Western distribution outlets.

According to *Western Industry* News Editor Beverly J. Watkins, who prepared the report after three months of research, plastics now ranks third as a material for industry, but the average plant operating executive still has little knowledge of specifying them.

Big Change Noted in Floor Care

Few plant men have been aware of how the newest methods and equipment for floor maintenance can actually reduce industry's costs, says a panel of three experts in the June *Western Industry*.

Accident reduction and production increases are cited as ways that new products and advanced techniques for floor care are saving lost man-hour at Western plant.

Making up the panel are Paul Glenn,

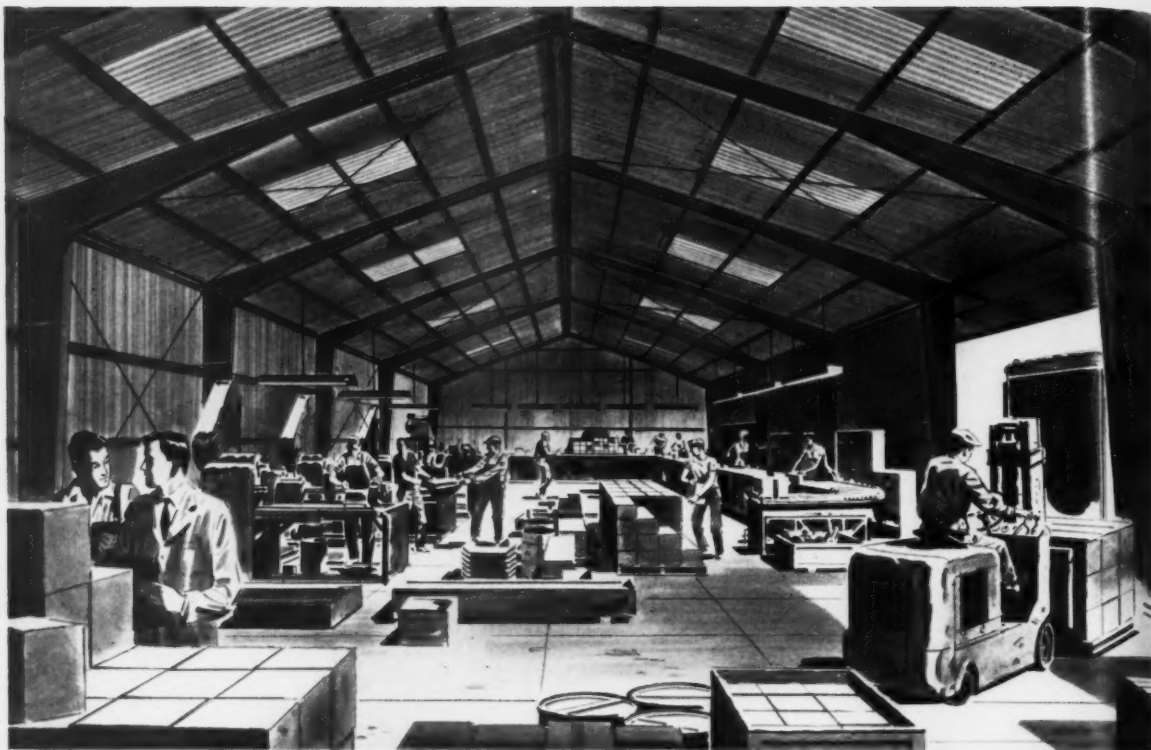
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see page 44

8 pages,
69-76

on page 80

.... and don't miss 45 best paint and protective
coating manuals, yours for the asking — page 62



Faster, More Efficient Production with Clear-span Soulé Buildings

Efficient planning of production, fabrication, or assembly is easier with clear-span Soulé Buildings. *That's because every square foot of floor area is usable.*

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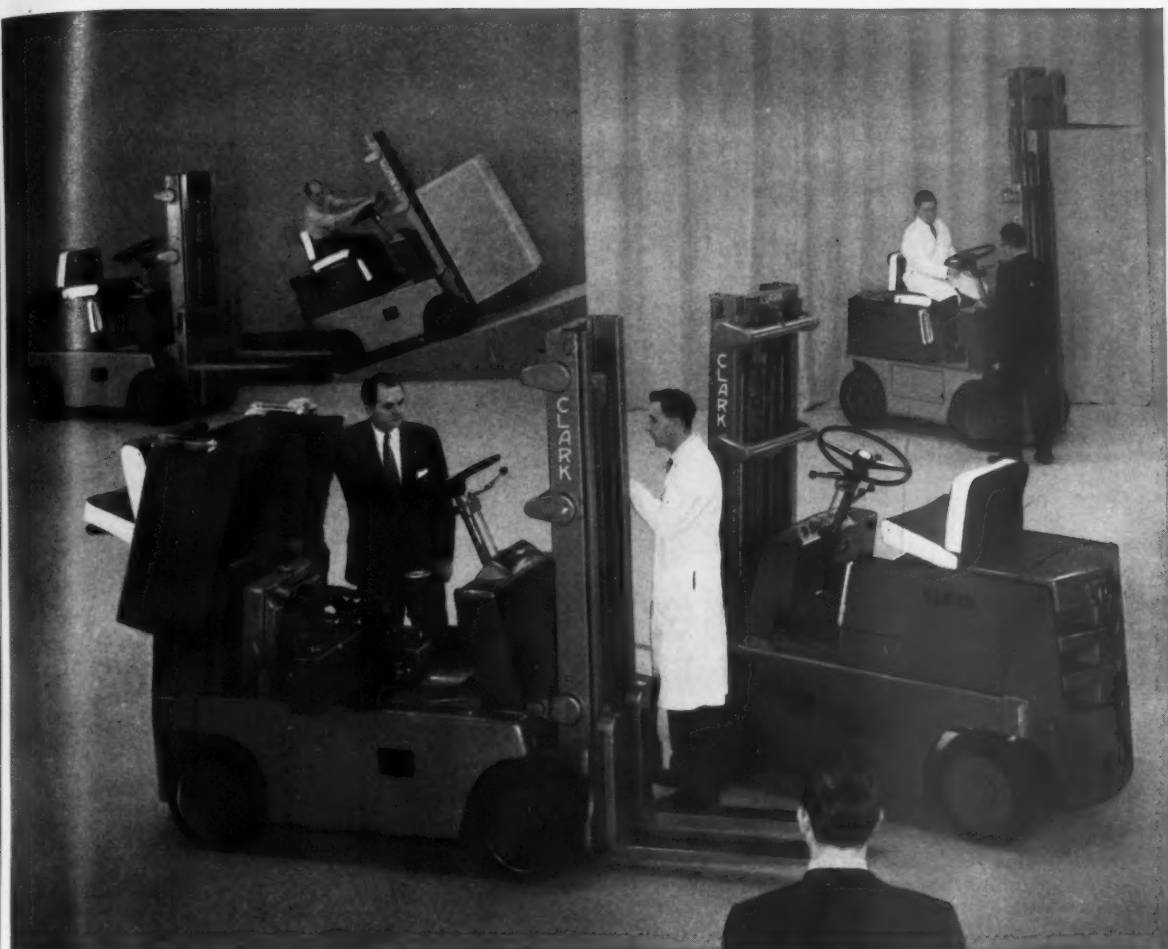


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June 1956
Vol. XXI, No. 6

Third Annual Plant Maintenance and Engineering Issue

ARTICLES

- In-plant solutions to the West's supply problems 44**
How two Western plants maintain effective replacement equipment economy even though located in two of the West's supply "problem" areas.
- Effective plant lighting boosts production 49**
Two case histories that show how production was increased and rejects were minimized through changes to better lighting systems.
- Today's prefab steel buildings 50**
... can provide you with a new low-cost plant within days. And here's a round-up of how they are being used in the West.
- Systematic lubrication means anti-down-time maintenance 52**
7 Western case histories containing useful lube tips on what to use and how to apply it ... PLUS 31 reviews of the best technical manuals available.
- 45 manuals on paints and protective coatings 62**
Carefully selected manufacturers' technical material available to you free.
- Do it yourself with plastics 69**
A special 8-page WESTERN INDUSTRY report on plastics for plant maintenance—what types and forms of plastics are available, how to use them, and where to buy them.
- Big change noted in floor care 80**
A three-part article covering up-to-date practices in plant floor upkeep.
- Why use package boilers? 90**
Here's the answer plus application and maintenance data supplied by a consulting engineer with plenty of experience in the industrial boiler field.

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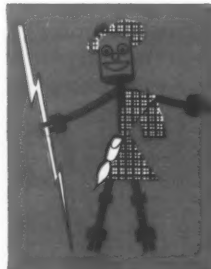
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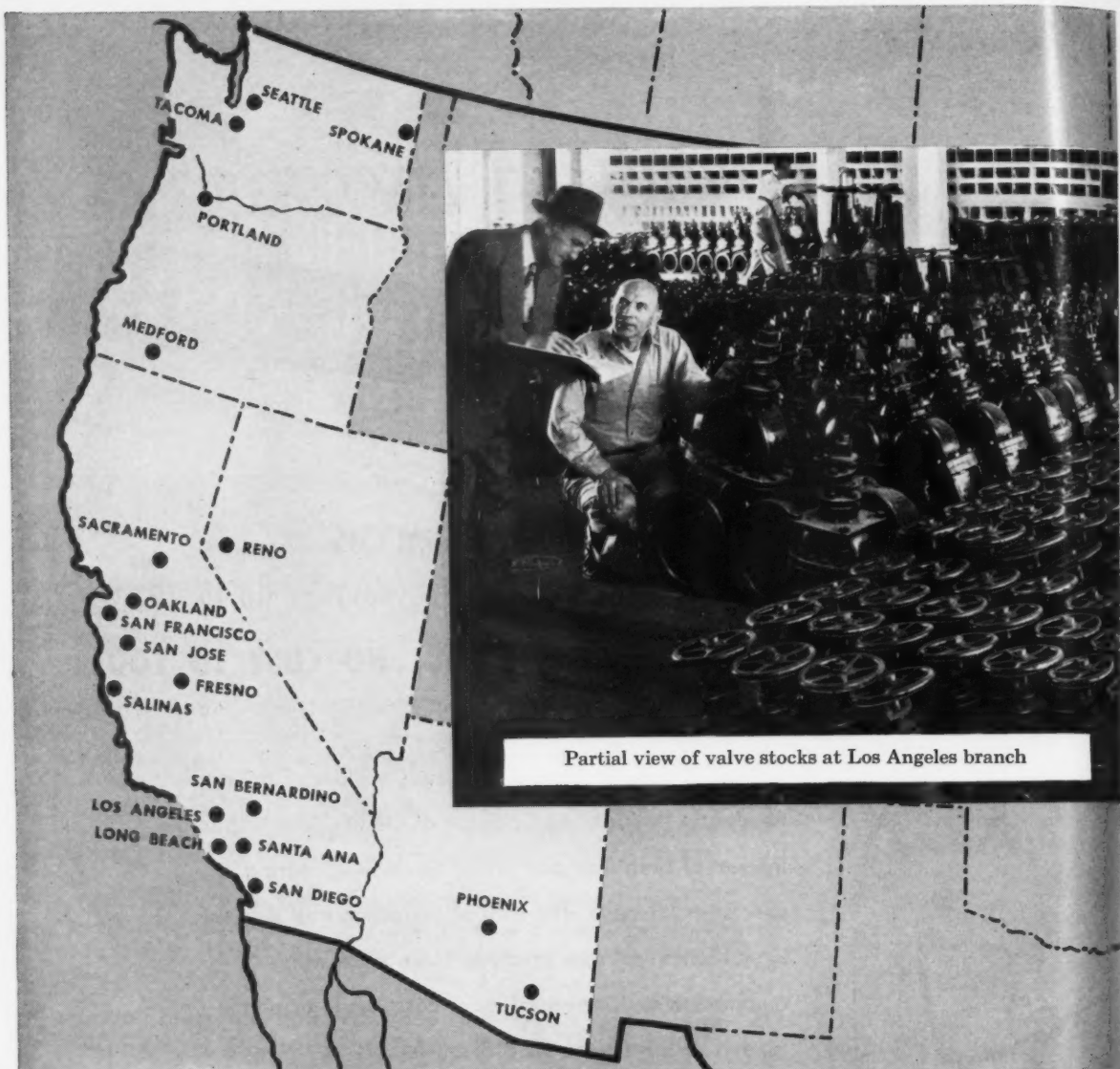
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WESTERN INDUSTRY — June 1956



LINK-BELT

—West Coast—

3 WEST COAST PLANTS
7 FACTORY BRANCH STORES

INDUSTRIAL DIGEST

Trukveyor Expedites

Handling of Freight

To increase savings and efficiency at this Seattle, Wash., warehouse (below), Link-Belt Trukveyors were installed to speed freight handling. As a result, these power-propelled Trukveyors moved 5,000 tons of supplies monthly. The trucks are towed by a continuously moving endless chain located under the floor.

Spaced at 21-ft. and 15-ft. intervals for bulk and bin storage lines respectively, trucks can be added to or removed from conveyors along their route. Pre-set automatic signals stop trucks at any of eight stations along the line. For full data on endless chain Trukveyors, write your nearest Link-Belt office for Book 2497.



Dotted lines show path of underground Link-Belt belt conveyor connecting seed plant and railroad dock.



Warehouse end of reversible tunnel conveyor which delivers bags to or from warehouse.



Upper conveyor carries bags from main conveyor to warehouse. Lower reverses handling.

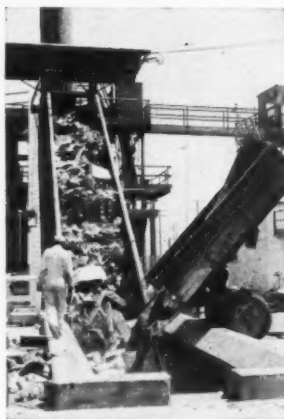


This short dock conveyor is reversible and handles incoming and outgoing cargo.

Conveys Bags of Seed Underground

Use Apron Conveyor in Waste Disposal

A Link-Belt apron conveyor is helping Los Angeles reduce its smog and keep its harbor clean by aiding disposition of more than 500 tons of combustible harbor waste monthly. Debris is dumped onto a horizontal run of the 7-ft. wide steel apron conveyor and carried up a 30-degree incline to the incinerator intake. Conveyor is powered by a 20-hp. Link-Belt Electrofluid drive, and controlled by a P.I.V. variable speed drive. Push-button controlled, semi-automatic unit handles up to 100 lbs. of pile butts and timbers per sq. ft. of conveyor pan. Link-Belt apron conveyors and feeders provide low-cost conveying and elevating for a wide range of bulk materials. Write for data today.



An underground Link-Belt belt conveyor system is eliminating costly trucking of cargo between the Eckhart Seed Co. plant on one side and a railroad dock on the other side of a freeway just south of Salinas, Calif. This novel system moves about 200,000 one hundred-pound bags of seed yearly between plant and dock with considerable savings in time, manpower and money.

Loads or Unloads

System consists of a 235-ft. long reversible main belt conveyor connecting terminals through a corrugated steel tunnel, and three short belt conveyors installed on the dock. Two of these are non-reversible, parallel each other, and are perpendicular to the main conveyor. One receives

bags from main belt, and the other delivers to it. The third belt is reversible, perpendicular to the two short belts and delivers directly onto the loading dock.

This flexible arrangement enables five men to load a 30-ton freight car with 600 sacks in one hour, without exposing cargo to the weather. System can be reversed in a matter of minutes . . . another time- and expense-saver.

LINK-BELT COMPANY

Plants, Sales Offices and Factory Branch Stores at San Francisco 24, Los Angeles 33, Seattle 4, Sales Offices and Factory Branch Stores at Portland 10, Spokane 10, Oakland 7, Salt Lake City 1. Stock Carrying Distributors in Principal Areas.

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Bigger Loads...

Less Spillage

...more Productive capacity



It's the amount of bulk-material *delivered* per shift or per day that counts, and the new model HA "PAYLOADER" tractor-shovel has proven in plant after plant that it consistently delivers more material faster and at less cost than heavier machines with larger engines.

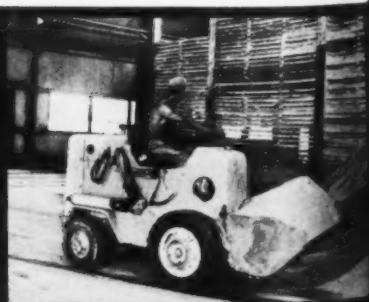
A big reason for this superior performance is the roll-back bucket action that scoops up heaping loads and carries them *low*. Another, is the exclusive built-in hydraulic shock absorber that cushions the load during travel — reducing spillage and allowing higher travel speeds.



Gets more: Forty degree tip-back of bucket at ground level gets heaped loads.



Keeps more: Maximum bucket tip-back is reached *before* bucket is raised—less spillage at pile.



Carries more: Exclusive hydraulic shock absorber cushions the load during transport — less spillage while carrying.



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This booklet contains performance reports of "PAYLOADER" tractor-shovels in a variety of plants and applications. A copy will be sent on request, without obligation.

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The only NON-STOP DC-6A cargo flight

NEW Overnight Service!

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San Diego

Shown here are but a few of the new Slick services. Not shown are Slick's new direct flights from New England cities to the Midwest, from Texas to the Midwest, and from Texas to the West Coast.

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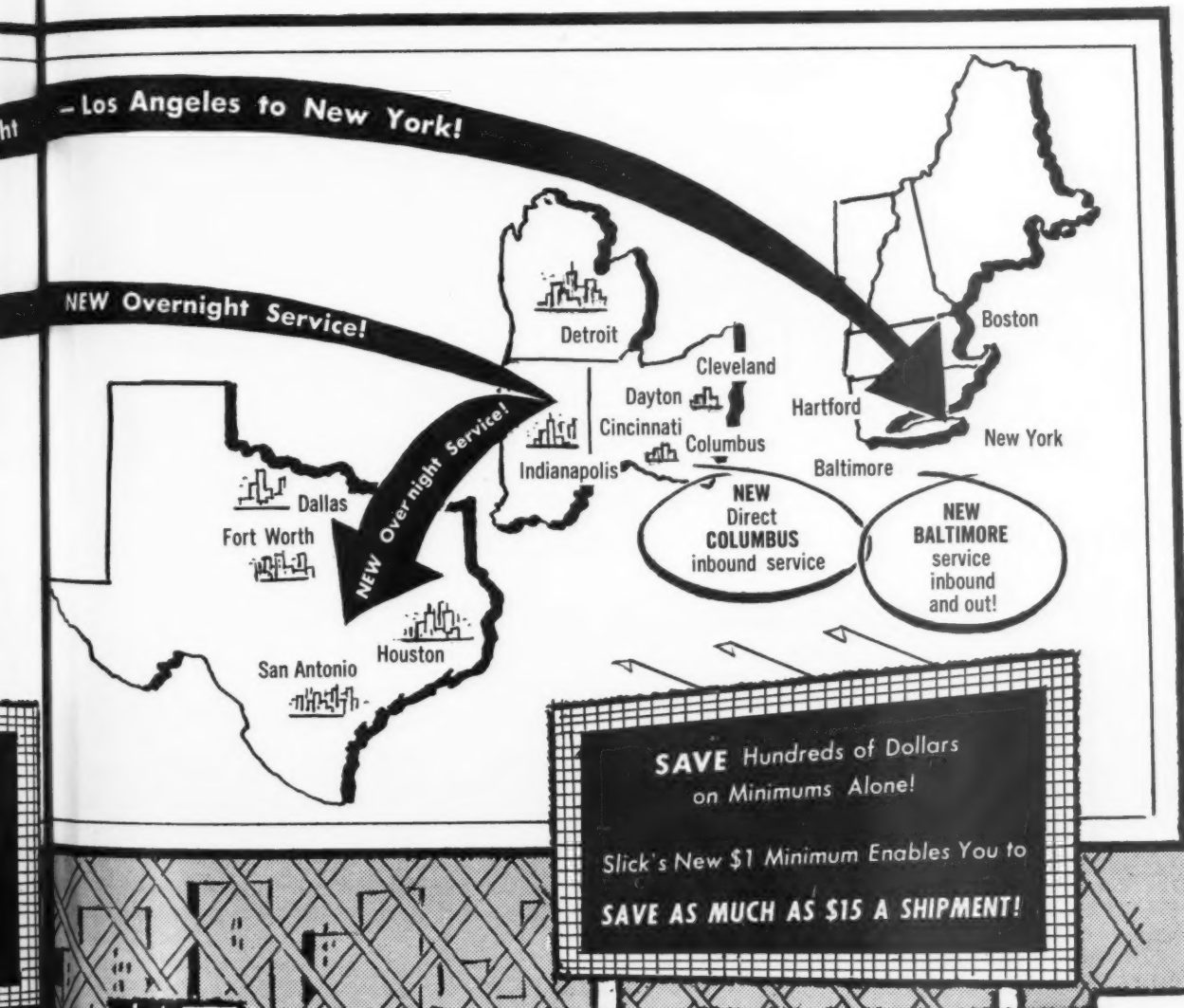
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WESTERN INDUSTRY — June 1956



Milo A. Burdick, plant superintendent,
Southwest Onyx & Marble Co.,
San Diego, California.



"...with UNOBA Grease these bearings last indefinitely."

"Union's UNOBA Grease solved the lubrication problems in our marble and onyx plant 10 years ago.

"Since we placed this remarkable grease on trial in 1946 we have practically eliminated bearing failures despite severe conditions of running water, abrasive grinding mixtures, and in many cases, extreme heat. Take the large crank-pin bearings on our marble gang saws like the one shown here... they used to have an approximate life of six months. Now with UNOBA Grease to protect these bearings *they last indefinitely.*

"And by using this same grease throughout our operation we are able to make tremendous savings in maintenance and materials every year. Thanks to Union's UNOBA Grease we have the lubrication situation well in hand."

Few operations demand more of a lubricant than Southwest Onyx & Marble Co., and it's on jobs like this that UNOBA demonstrates its great superiority. If moisture, abrasives and heat are problems in your plant you'll be wise to try UNOBA, too. Immediately available from your nearby Union Oil representative.

76 UNION OIL COMPANY OF CALIFORNIA

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Dallas: 313 Fidelity Union Life Bldg. • Kansas City, Mo.: 612 W. 47th St.
New Orleans: 644 National Bank of Commerce Bldg.

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HOW CAN A SMALL FIRM HANG ON TO TOP EMPLOYEES? Small firms have been the happy hunting ground for big Western aircraft-missile firms on the prowl for desperately needed engineering brainpower (see "The West's battle for engineers," p. 44 of May 1956 *WESTERN INDUSTRY*.) What can the thousands of smaller Western plants do to meet these onslaughts effectively? Take a look at Roylyn, Inc., manufacturer of aircraft and general industrial products in Glendale, Calif.—right next door to the West's biggest aircraft-missile makers—and you'll doubtless find some answers.

Roylyn, although yet a comparatively small company, was founded in 1945 and has grown and prospered with industry in the San Fernando Valley area. While statistics show a larger influx of labor to the valley than any other area of the nation, they also show an ever-increasing number of new companies and expansion programs in the area to utilize this manpower. This condition places valley industry in competition for top level labor, with the best going to the company providing the most in employee security.

The nub of Roylyn's employment success story is this: a close management-employee operation with a well-balanced wage, promotion, and benefit program. The firm voluntarily provides 13 major benefits in behalf of employee welfare and security which are usually afforded only by large manufacturers. These are the benefits:

Profit sharing and retirement plan—This program provides for a 50-50 split of profits up to 15% of participating employee earnings (which happens to be the maximum allowable by the Treasury Dept.)

A unique "operations committee"—The company delegates group-management responsibilities to department managers in the formulation and execution of policies.

Periodic merit reviews—All employees are individually considered for promotion and raises at scheduled periods of 4, 6, or 12 months, depending on job classification. (Roylyn announced recently a 5% pay increase for all employees, effective April 1, 1956, which did not affect the periodic merit reviews of individual employees.)

A "first consideration" program—No job is filled from the outside until present employees are screened for talents and qualifications necessary to filling that job.

Free life insurance—All employees are issued \$2,500 worth of life insurance at no charge to them.

A broad scope medical plan—This plan includes hospitalization benefits for employees and their dependents.

A continuing suggestion plan—Cash awards are made monthly for operational suggestions accepted by a com-

mittee of fellow employees.

Coffee breaks at 10 a.m. and 3 p.m.—The company allows 10-min. breaks and provides free coffee to all employees (a program, incidentally, that costs Roylyn \$20,000 a year!)

Liberal holiday and vacation plan—Six legal holidays are included in this plan, with a two-week vacation for one-year employees and three weeks after 12 years.

An employee club—This club is an organization of, by, and for employees with social, charitable, and sports activities encouraged and participated in by management.

A company-sponsored picnic—This is an annual affair for employees and families, sponsored by Roylyn.

Company-sponsored Christmas party—With luncheon and tree, this party is sponsored by the company for all employees.

Service Awards—Recognition awards of five- and ten-year service are given. Last year, for example, seven employees received clock-radios for five years of service. Three received watches for 10-year service. This year, fifteen employees will receive clock-radios.

WATCH YOUR JOB APPLICATION FORMS IN WASHINGTON, says the Washington State Board Against Discrimination in Employment. The board has issued an advisory policy statement warning against questions of race, religion, or nationality in job applications. On advice of the state's Attorney General, the board declined to bar such questions entirely, so instead a warning was provided that these questions will be considered evidence of discrimination in any complaint unless the employers can justify them as necessary.

SUPREME COURT SAYS WASH-UP PAY REQUIRED, in a decision involving King Packing Co. of Nampa, Ida., and an eastern battery manufacturer. Gist of the two decisions written by Chief Justice Warren is that workers must be paid for essential labor performed during and after their principal production job, with the court unanimously holding that such payments do not come within the ban of the 1947 portal-to-portal act.

One of the cases involved butchers who had to spend preliminary time sharpening their knives; the other concerned a need for washing up at the close of the day.

LATEST GOVERNMENT LABOR PUBLICATIONS include the following (available from the U. S. Dept. of Labor, Bureau of Labor Statistics, 630 Sansome St., San Francisco 11, Calif.):

Directory of National and International Unions in the U. S., 1955, in addition to listing all of the unions, gives the name, address, officers, convention schedule, publication title, and editor's name, membership and number of locals. Information is included on developments in labor unions since 1953, structure and membership of unions, union functions and administration, and a listing of state labor organizations. It's BLS Bulletin 1185, 64 pages, at a cost of 45¢ per copy.

Wages and Related Benefits in 17 Labor Markets, priced at 45 cents, is an annual analysis of the data on wages and related benefits obtained through area wage surveys done in 17 labor markets each year. Included among the 17 are Los Angeles, San Francisco, Denver, and Portland. Covered are wage differences, average earnings by occupation, trends of occupational earnings, and many phases of supplementary wage provisions.



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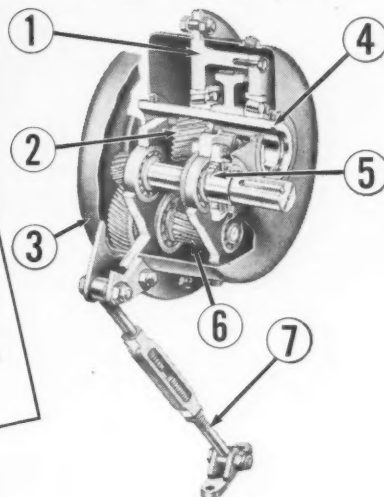
Investigate the Falk all-steel Shaft Mounted Drive. Write to Department 247 for engineering bulletin, including selection and dimension details.

THE FALK CORPORATION, Milwaukee 8, Wisconsin

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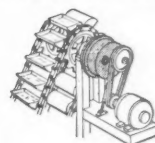
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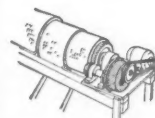


- 1 All-steel Frame**, with more than double the rigidity of iron, supports all rotating elements.
- 2 Precision Helical Gears**, designed and machined by Falk, rated to AGMA standards.
- 3 Pressed Steel Housings**, whose sole function is to keep oil in, dirt out; easily removed for gear inspection without dismounting unit.
- 4 Through Hollow Shaft** with counter bore provides for easiest installation or removal from driven machine shaft extensions.
- 5 Backstop** can be furnished with the unit or added later for positive prevention of reverse rotation.
- 6 Positive Lubrication**, continuous direct dip of revolving elements at all speeds.
- 7 Tie Rod** and turnbuckle serve as anchor and facilitate V-belt or chain adjustment.

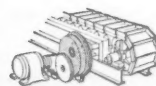
A FEW TYPICAL APPLICATIONS



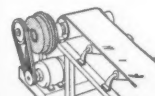
BUCKET ELEVATOR



SAND CLASSIFIER



APRON FEEDER



BELT CONVEYOR

FALK

... a good name in industry

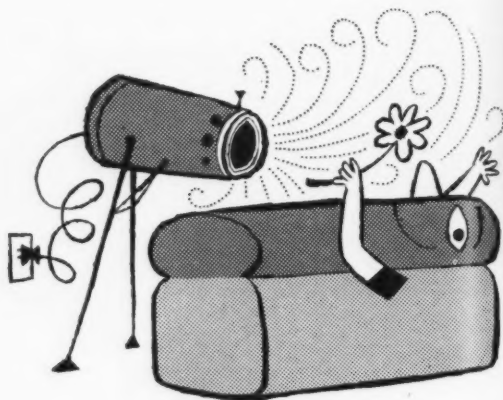
... for more details, circle No. 10 on Reader Service Postcard

Can these new electronic marvels save you money?

The new techniques in electronics are limitless... are helping many businessmen make better products at lower cost. Here are four of the newest which may help you:



Electronic "detective" hunts transient metals. Powerful, new metal detectors now "frisk" plastics, wood, rubber, textiles for transient metals—and find them—even when deeply embedded.



Electronic "gun" keeps bread fresh for months. Smaller, lighter generators of electron beams now destroy bacteria, moulds, yeast — sterilizing foods and drugs without changing flavor or appearance.



"Silent sound" scrubs tiny component parts. Improved ultrasonic generators now clean tiny component parts in seconds, where cleaning by hand has been costly, even impossible.



TV gives "superman sight" to industry. New, small TV cameras let operators peer through walls, around corners, under ground—even watch highly dangerous operations in complete safety.

New techniques in electronics exist in almost every field. We'll help you get information on techniques that apply in your field.

Pacific Gas and Electric Company

... for more details, circle No. 11 on Reader Service Postcard

WESTERN INDUSTRY — June 1956

The Power Drive that Gives You Everything!

New RIGGID No. 200 Tripod Power Drive with Folding Tray

Really Portable—Lightweight, legs and tray fold in snugly, handy handle for carrying.

Easily, Quickly Set Up—Built-in folding tray and legs open up for business instantly—all one unit, no loose parts.

Extra Rigidity—Open tray holds legs in strong, solidly rigid stance, adds strength. No front leg to obstruct swing of die stock handles.

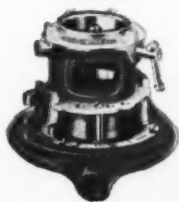
Fast Easy Speed Chucking—Guaranteed to grip tight forward and reverse—no slip, even with geared tools. Replaceable insert jaws for long service.

Extra Power—Motor has larger long-life brushes, longer commutator, won't bog down under extra load.



RIGGID
Spiral
Reamer

RIGGID
65R Pipe
Threader



RIGGID
Heavy-Duty
Pipe Cutter

You can't beat it for performance, easy work and durability. Buy it at your Supply House . . . much the most for your money!

Power for any hand pipe tools
1/8" to 2" pipe, 1/4" to 2"
bolts; geared tools to 12".



The Ridge Tool Company, Elyria, Ohio, U.S.A.

. . . for more details, circle No. 12 on Reader Service Postcard



PROGRESS THAT HAS TAKEN PLACE IN BOTH THE PACKAGING AND MATERIALS HANDLING FIELDS will be well evidenced by displays you will see at the sixth Western Packaging and Materials Handling Exposition scheduled for July 10-12 at the Pan Pacific Auditorium in Los Angeles. Number of booths that have been reserved to display the most up-to-date products total about 130 to date.

In addition to brand new equipment and materials, standard items have been modified and up-dated during the two all-out-growth years the West has experienced since the last show. Designers have had to reach deeper into their trick bags to meet the latest requirements of automatic plants, pre-packaged distribution, etc.

Expected attendance is estimated in excess of 10,000 plant operators and industrial distributors. Presented by Clapp & Poliak, Inc., which has Western headquarters at 759 Monadnock Bldg. in San Francisco, the show's hours are 1:00 to 6:00 P.M. on the 10th and 12th and 1:00 to 10:00 P.M. on the 11th.

Driverless industrial trucks—such as the line guidance system developed recently in Southern California and first publicly reported in the April 1956 issue of **WESTERN INDUSTRY**—and other applications of "guided



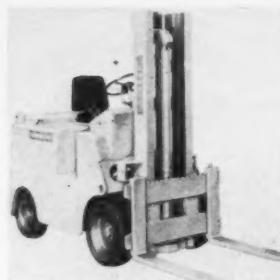
ELECTRONICS BRAIN-CONTROLLED, this industrial truck requires no driver. Guide wire strung along ceiling transmits directing radio waves to control unit.

missile" principles will be among displayed equipment. Barrett-Cravens' (Booths 308 and 310) Guide-O-Matic system which stops and starts a driverless industrial tractor automatically by radio waves transmitted through a guide wire strung along the ceiling to a "sniffer box" or electronic brain attached to the tractor tops the list of such equipment on the market and planned for display at the show.

A lineal footage counter for measuring accurately lengths of metal sheet, wire, paper, cloth, or other continuous-production materials is another top-interest item scheduled for appearance at the show. (Booth 231) A

Post Machinery Co. product, the counter synchronizes a wheel to the speed of the item being manufactured so that every time the wheel revolves a photolight beam is broken and a count equal to one foot or fractions thereof is registered on the counter.

First Western showing of Towmotor's new line of fork lifts, the Pacemaker series, will take place at the show. (Booths 417 and 419). New line features precision power



UNVEILED TO THE WEST at the exposition will be Towmotor's new four-model line of lift trucks, the Pacemaker series.

steering, automatic transmission, and an advanced positive-action hydraulic system. Lifting capacities of the four-model line range from 6,000 to 11,000 lb. and the new series is available in gasoline, diesel, and LP-gas powered units. Also new in design of this model is adjustable off-center seating to assure maximum visibility.

Low cost conveyORIZED storage will be the theme of Rapistan's display. (Booth 202) A new application called flow-rack, the unit combines gravity wheel track with



ELIMINATING AISLE-WALKING, conveyORIZED storage equipment will be highlight of Rapistan's display.

Rapistan rack components to move goods to a point where efficient selection can be made with no long aisle walking or hunting. Applicable to order-picking or manufacturing operations, the unit is free-standing and requires no walls, partitions, or extra braces or supports.

The technical side of cushioning materials for packaging will be emphasized at Kimberly-Clark's booth (Booth 317) An "island laboratory unit" manned by specially trained technicians will permit actual laboratory demonstrations portraying Kimpak's performance in comparison with other cushioning materials.

Latest innovations in the wooden pallet industry will be available for examination at a booth reserved by the National Wooden Pallet Manufacturers Assoc., with headquarters in Washington, D. C. (Booth 506) The associations first participation in a Western trade show, it plans to present such new items as nailless pallets, the new NWPMA Grade Mark pallet, and a new pamphlet entitled "What you should know about expendable pallets," which is a valuable guide to all product shippers.

Grease, moisture, and mild acid-resistant production-line hoppers will be displayed by National Metal Edge Box Co. (Booth 425) Resistance is attained through new Celulstre treatment on interior and exterior surfaces. Units are highly applicable to production in which small

... continued on page 20



6TH

WESTERN INDUSTRY

invites you to attend the

WESTERN PACKAGING & MATERIALS HANDLING EXPOSITION

The show with everything to help package and handle your products faster, more efficiently—in your plant—and into your customers' hands. You'll see the latest machinery, materials, equipment, supplies and services in packaging and materials handling—all in one place, at one time. **See, try, compare.** Let technical experts help solve your production problems, slash your costs, boost sales.

JULY 10-12, 1956

PAN PACIFIC AUDITORIUM • LOS ANGELES, CALIFORNIA

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66th WESTERN PACKAGING AND MATERIALS HANDLING EXPOSITION

On your own doorstep

*The largest display in the West of packaging
and materials handling machines, materials, supplies and
services that will help you to cut costs,
speed production and boost sales.*

See Action Demonstrations of:

ADHESIVES AND COATINGS	GLASS CONTAINERS
BATTERIES	HAND TRUCKS
BELTING	HOISTS
BINS	LABELERS
BRIDGE RAMPS	METAL CANS
CARTONERS, CASE LOADERS—	MOLDED PLASTIC CONTAINERS
UNLOADERS	PALLETS
COMMUNICATION SYSTEMS	PRINTING EQUIPMENT
CONTAINER MAKING	PRINTING SUPPLIES
EQUIPMENT	PULLEYS
CONVEYORS	RACKS
CRANES	SCALES
DOLLIES	SHELVING
ELEVATING ENDGATES	SHIPPING CONTAINERS &
FANCY PAPERS AND FOILS	SUPPLIES
FIBRE CANS AND DRUMS	SKIDS
FILLERS AND CAPPERS	SKID JACKS
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(BAGS, ETC.)	TRANSPARENT FILMS
FOLDING AND SET-UP BOXES	WEIGHERS AND CHECKERS
FORK TRUCKS	WRAPPERS AND SEALERS

For all executives concerned with the vital problems of effective packaging and materials handling. See and compare the products and services of more than 150 leading manufacturers. Refresh your knowledge. Solve problems by talking with top technical experts.

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759 Monadnock Building
San Francisco 5, California

JULY 10, 11, 12, 1956
PAN PACIFIC AUDITORIUM • LOS ANGELES,

the compact SIMPACT

Get easy, accurate operation with this quality ratchet threader



TOLEDO SIMPACT SELF-CONTAINED THREADER

Save time—save effort—save money with this TOLEDO SIMPACT. Just look at these outstanding features: cam type, quick action pipe holder—die change in seconds—easy to operate—self contained—cuts leakproof, accurate threads. One set of high-speed steel dies cuts four sizes, 1" to 2" pipe.

NO. 78 PORTABLE POWER DRIVE

Most versatile power drive available. Its lightweight, sturdy construction and folding legs provide rapid set-up. Works with any threader—handles 1/4" to 2" pipe. Write for complete information.



NO. 68 TOLEDO PORT-A-PONY

A 26 lb. power drive for pipe threading, lifting, cranking, turning, pulling, winding. Versatile and powerful. Works with any threader. Carry it anywhere. See it at your supplier's today.

THE TOLEDO PIPE THREADING MACHINE COMPANY
Toledo 4, Ohio



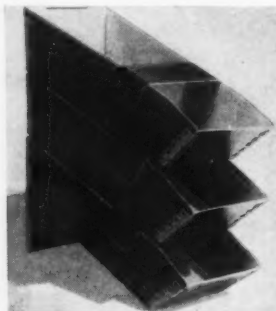
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WESTERN MEETINGS

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parts must be made readily available to assemblers in such fields as electronics, gear mechanisms, and electrical components.

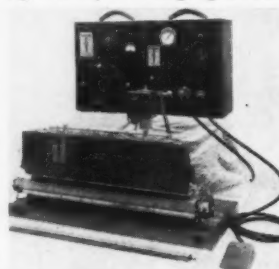


TREATED PRODUCTION BOXES that have highly damage-resistant interior and exterior surfaces will be shown by National Metal Edged Box Co.

Tenite polyethylene in many forms will be emphasized at Eastman Chemical Products' booth. (Booth 218) Blown bottles, film and packaging, coated paper laminated to cellophane, and other product forms will be available for examination.

First Western display of Lynch Corp.'s Model PB Wrap-O-Matic automatic wrapping machines will be among the just-out showings. (Booth 406) The machine will be wrapping a food supplement item known as Kev-Etts at the show, samples of which will be given to interested viewers.

A high-speed Band-rotary film sealer will be highlighted by Packaging Industries, Ltd. (Booth 205) The



SPEEDY SEALING of film materials for packaging is the feature of this machine scheduled to be demonstrated by Packaging Industries, Ltd.

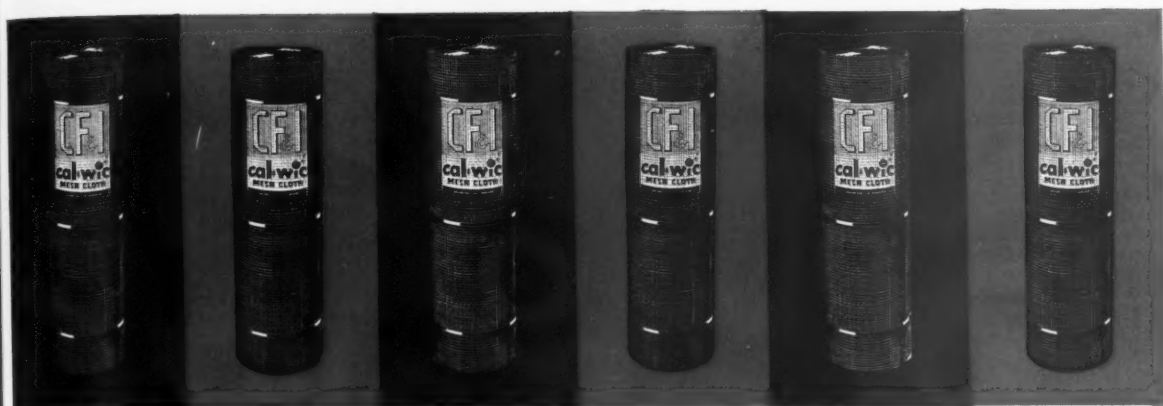
machine will seal polyethylene, saran, pliofilm, nylon, acetate, mylar, vinyl, and other films in varying thicknesses with accurate temperature, pressure, and dwell-time control.

New steel strapping equipment will be shown by A. J. Gerrard & Co. (Booth 531). Heading up the list of new products is a completely automatic, electrically powered strapping machine—the Autobinder. Maximum rate of sealing and cutting steel strapping is 1,000 ties per hr. Machine will handle packages of varying size and contour with maximum package size of 22 x 20 in.

Also scheduled to be shown is a new, lightweight but heavy duty strap cutter which will slide easily and quickly under the tightest strap. It cuts strapping up to 2 in. in width with light one-hand pressure. Another strapping tool to be shown is the No. 430 electric reel which dispenses and cuts 3/4-in. to 2-in. strapping to any length at the touch of a lever. This piece of equipment can be moved easily on an ordinary hand truck. A new strapping tape and a tensioning tool also will be shown.

... continued on page 24

there's a
cal-wic[®] MESH CLOTH
that's right for your job!



There's a Cal-Wic Mesh Cloth that is ideal for every screening, grading, cleaning and processing job. That's because Cal-Wic Mesh Cloth is regularly manufactured from a wide variety of ferrous and non-ferrous metals in many different meshes and weaves.

This complete range of metals, meshes and weaves enables you to get the mesh cloth that has the exact construction and resistance to corrosion, abrasion or high temperatures that you need in your own particular job. And—when it's a Cal-Wic Mesh Cloth—you're assured of long-lived, accurate performance because Cal-Wic is produced from steel made by CF&I under a system of rigid quality controls throughout every stage of production.

For complete information on Cal-Wic Mesh Cloth and how you can use it to best advantage in your operations, just write or call the nearest sales office listed below.

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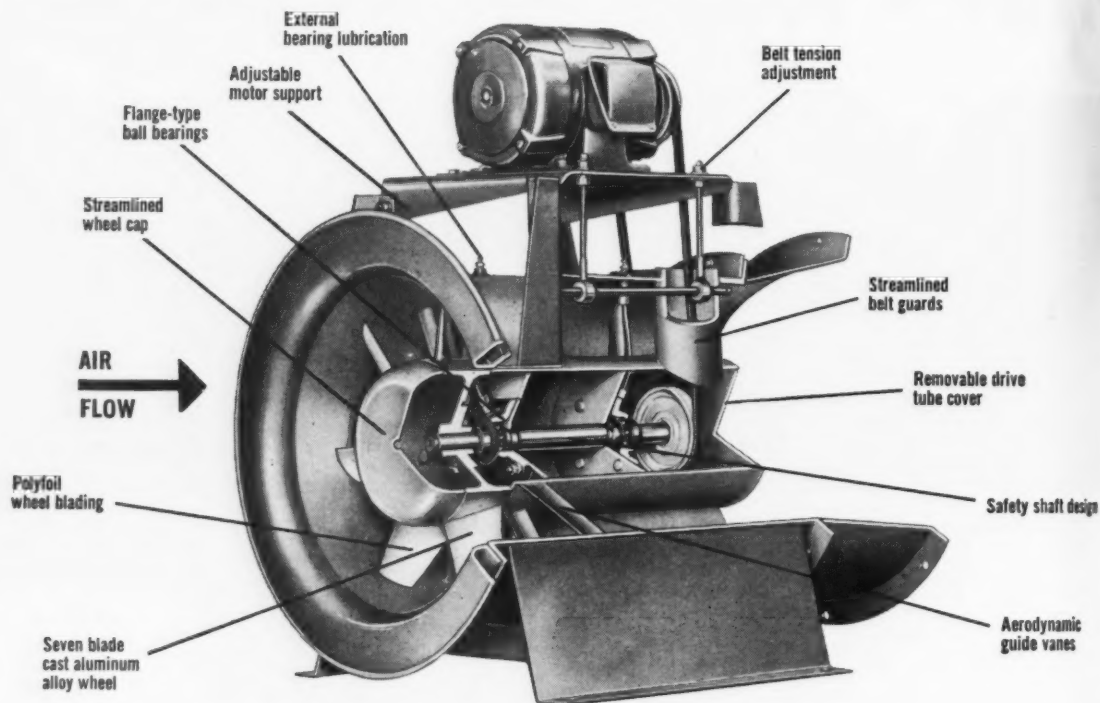
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NEW

Improved Westinghouse Axial Flow Fans *for Industrial air, fume, vapor handling jobs!*



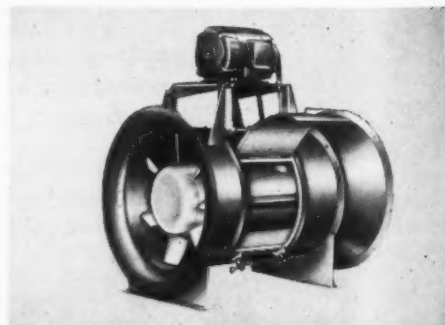
CUTAWAY VIEW OF WESTINGHOUSE AXIFLO® VANEAXIAL FAN FOR GENERAL APPLICATION.

COMPLETE NEW LINE

With: volumes from 1,700 to 100,000 CFM—static pressures up to $3\frac{1}{4}$ "—14 sizes, Vaneaxial or Tube Axial, direct-connected or V-belt driven, with wheel diameters from 15" to 72".

- **Space Saving** . . . compact Axial Flow design permits installation directly into duct work.
- **Improved performance** . . . non-overloading horsepower feature permits use of smaller motors.
- **Least maintenance** . . . rugged practical construction insures continuous trouble-free operation.

For complete application service, call your nearest Sturtevant Sales Engineer, or write Westinghouse Electric Corporation, Sturtevant Division, Dept. 20F, Hyde Park, Boston 36, Mass.



Spray booth Vaneaxial Fan specially designed to provide easy access required for paint spray exhaust!

WATCH WESTINGHOUSE!

WHERE **BIG THINGS** ARE HAPPENING FOR YOU

... for more details, circle No. 16 on Reader Service Postcard

WESTERN INDUSTRY — June 1956



Perspective illustration shows travel of conveyor system through bench area where principal meter repair and re-assembly occurs. Other conveyors carry meters through stripping, cleaning, tinning, painting, oiling, testing and to storage or shipping.

Conveyors **Pacing Production**

A Webb overhead trolley conveyor system was designed to provide straight line production flow through all the many operations required in this gas meter repair plant. This straight line flow system resulted in lower production costs . . . reduced manual handling . . . set the pace for production . . . increased efficiency . . . was a contributing factor in improving work quality. Prior to the installation of the conveyor system, there were 25 manual handlings of a gas meter . . . covering 937 feet of movement. Now, there are only two manual handlings of each meter . . . covering 100 feet of movement. These two manual operations occur in Receiving and Final Storage Area.

This Webb conveyor system also provides overhead

storage area for meters in process. A backlog of production constantly flows on the conveyor line. The conveyor brings the meters down to a 34" height when they enter the work bench area. On leaving the area, the conveyors rise again to a 7' clearance level . . . leaving all aisles open at all times. By providing this live storage area overhead, the conveyor system completely frees floor space for production operations.

This installation is a typical example of how Webb conveyor systems are increasing plant efficiency and lowering production costs in many industries. Webb engineers can also help you achieve these goals . . . regardless of your materials handling needs.

Write to us on your company letterhead and we will be happy to place your name on the Webb mailing list to receive factual technical information on conveyor installations, case history reports, and new product literature.

JERVIS B. WEBB CO. of CALIFORNIA
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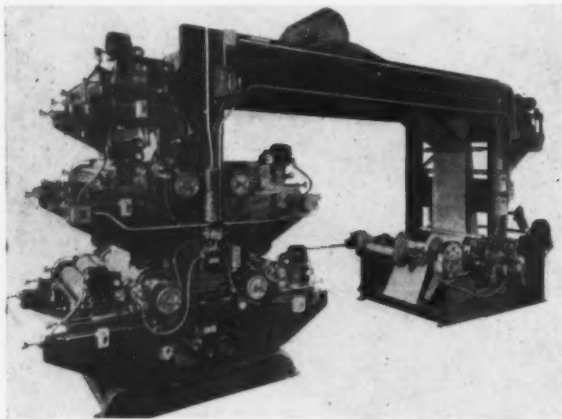
June 1956 — WESTERN INDUSTRY

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WESTERN MEETINGS

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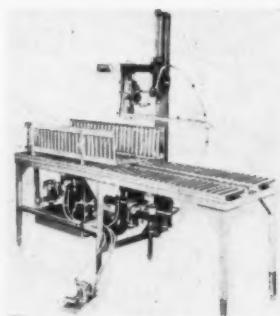
Flexographic press for printing films, cellophanes, and foils will be shown by Wolverine Paper Converting Machinery Corp. (Booth 307) Units are now equipped



ELECTRO-MAGNETIC brakes and clutches are new on this film printer.

with electro-magnetic induction brakes and clutches which make them more automatic. Termed the Hydro-Printer Model X-120, it is a hydraulic unit with motorized free wheeling ink rollers.

Simultaneous top and bottom stapling of center slotted corrugated and fibre board boxes is featured on Container Stapling Corp's new Model CSC-2 which will



DOUBLE-HEADED STAPLER is air-operated and will staple top and bottom of center slotted boxes at same time.

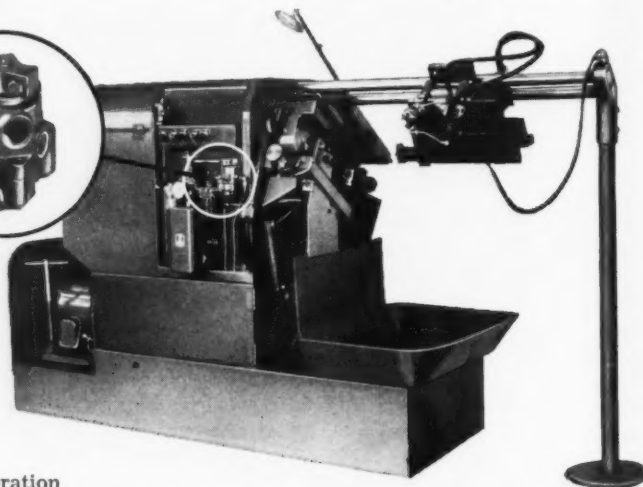
be on display. (Booth 321) Air operated and equipped with two stapling heads, the stapler has no electrical connections. Two other stapling machine models will also be shown.

All-purpose steel framing material which has typical applications as shelving racks, conveyor mounts, bins, carts and dollies, machine belt guards, mezzanine structures, machine and motor mounts, etc., will be exhibited by the Dexion Div. of Acme Steel Co. (Booth 433) Called Dexion, the material is manufactured from cold rolled steel and round holes are spaced at 3-in. intervals for rapid assembly.

Mylar polyester films for tough packaging job applications will be shown by E. I. du Pont de Nemours & Co. (Booth 422) A selected group of on-the-market pack-

... continued on page 21

NOPAK Dual 4-Way is Main Air Control on "Modern" Cutting-Off Machine



Modern Machine Tool Co., Jackson, Mich., uses the NOPAK Dual 4-Way valve as the "main air control valve" on its Cutting-Off Machine for these reasons:—

1. It provides the necessary sequence of operation control.
2. It is "easily mounted . . . in readily accessible position".
3. It directs air pressure either to part of the air system, or the whole system, as required.
4. With valve lever at 45°, "the operator can set the tools, with a gauge, against the stock while it (the stock) is locked in the collet".
5. In normal running position with valve lever at 90°, air is directed to other parts of system, while maintaining pressure on collet cylinder during cutting cycle.

This application may suggest how you can use NOPAK Valves and Cylinders for effective control and application of fluid power in your

product, or in your plant equipment.

GALLAND-HENNING NOPAK DIVISION

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E. C. Griffin Co., 524 1/2 First Ave., So., Seattle 4, Wash.
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NOPAK
® VALVES AND CYLINDERS
DESIGNED for AIR and HYDRAULIC SERVICE

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WESTERN INDUSTRY — June 1956

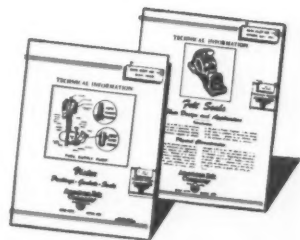


The seals shown here are a combination of felt for shaft lubrication, plus spring-loaded leather or rubber for exclusion of water, fumes, dust. Such seals are made by a number of companies, in standard and special diameters. List of firms on request. Felt seals can also be made impervious by metal enclosures, or by the use of felt with one or more laminations of synthetic rubber. Just remember that felt is so versatile that it can either lubricate or seal, or both at the same time. On request we will collaborate on designs and specifications. Write for Data Sheet No. 11, "Felt Seals, Their Design and Application," and for No. 14, "Vistex, Packings, Gaskets, Seals."



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PACIFIC COAST: A. B. BOYD CO., 1253 Howard St., San Francisco, also 763 E. 14th St., Los Angeles 21, Calif.; 733 So. E. Union Ave., Portland 4, Ore.; 404 Dexter Ave., Seattle 9, Wash.
PLANTS: Glenville, Conn.; Franklin, Mass.; Newburgh, N. Y.; Detroit, Mich.; Westerly, R. I.
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FREE! Write for Data Sheets Nos. 11 and 14.

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LET THE AMFORGE 3-V PROGRAM HELP YOU!

VARIETY: The equipment to forge many different sizes and shapes.

VERSATILITY: The ability and skill developed through years of experience to help you engineer your forgings.

VISION: A desire and willingness to become your continual partner in the solution of your forging problems, present and future.

Your forging needs can become a mutual problem. The AmForge 3-V program was designed to relieve you of the burden confronting the man illustrated above. Our plant in Azusa, California, is equipped to follow through on the most complicated of orders—either Press or Upset Forgings. Our engineers are prepared to work with you. Please phone us collect when you have a "forging" problem.

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PLANTS: AZUSA, CALIFORNIA • CHICAGO, ILLINOIS

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WESTERN INDUSTRY — June 1956



J-M 85% Magnesia is lightweight . . . easy for workmen to install half-sections on this 10" steam line. Insulation work at the Grace Chemical plant was performed by Young Sales Corporation of St. Louis. Engineering and construction was directed by Foster Wheeler Corporation of New York.

Your Btu's and dollars go further when you specify **Johns-Manville 85% Magnesia**

... the choice of insulation engineers
at Grace Chemical's new Memphis plant

INDUSTRY'S LONG-TIME standard for temperatures to 600F is still your best insulation buy. For J-M 85% Magnesia provides high insulating value, easy application, long life, initial low cost and minimum maintenance. That's why insulation engineers consistently specify J-M 85% Magnesia for modern installations like Grace Chemical's new anhydrous ammonia-urea plant. That's why it will pay you to specify J-M 85% Magnesia for your new plant or modernization program.

To assure you maximum value from your insulation dollar, Johns-Manville gives you complete drawing-board-to-job-site service. You get expert recommendations by the world's most experienced insulation engineers . . . plus expert installation by authorized J-M Insulation Contractors. Write today for further information on J-M 85% Magnesia and Johns-Manville's unmatched facilities to solve your insulation problems. Address Johns-Manville Box 60, New York 16, N.Y. In Canada, Port Credit, Ontario.



J-M 85% Magnesia also comes in block form. Here you see it being applied to a vertical drum at a New Jersey petroleum refinery.



Johns-Manville *first-in* **INSULATION**
MATERIALS • ENGINEERING • APPLICATION

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PILLOW BLOCKS

the only
Pillow Block
with all these
outstanding
features!

DOUBLE LUBRICATION
QUIET OPERATION
SELF-ALIGNING
LOW COST

Randall offers the most complete line of high quality Graphited Sleeve Bearing Pillow Blocks to be found anywhere. They are available in many different styles and sizes for light, normal, and heavy duty applications on shafts from $\frac{1}{2}$ " to $3\frac{1}{4}$ " inclusive. They have a reputation for giving long, quiet, trouble-free service with the minimum of maintenance. See this complete line of competitively priced pillow blocks at your local distributors, today.

The exclusive Randall Ball Assembly, here illustrated, is in its several different styles, a basic part of every Randall Pillow Block. It is made of a precision hollow ball packed with No. F-11 wool felt. When the graphited bronze bushing is pressed into the ball, a large "deep well" oil reservoir is formed. Oil from this reservoir is fed to all parts of the bearing surface by porous graphite plugs and grooves in the bearing. Thus proper lubrication is assured under extreme operating conditions.



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PILLOW BLOCKS
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GRAPHITED BEARINGS
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SAFETY COLLARS
BRONZE CASTING

RANDALL GRAPHITE BEARINGS, INC.

1011 S. Greenlawn Avenue, Lima, Ohio

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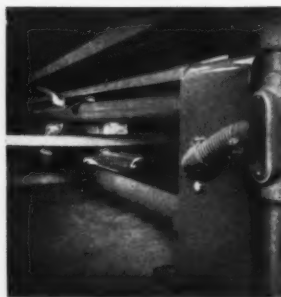
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WESTERN MEETINGS

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ages typical of mylar applications will include packages wrapped on automatic high speed machinery. Latest developments in this field by Du Pont make it possible to use mylar in bundling and overwrapping operations.

Exact-weight gaging of polyethylene coating applied to various packaging media such as paper, paper board, aluminum foil, etc., is the function of AccuRay beta



RADIOISOTOPES electronically measure thickness of packaging materials that pass through the AccuRay gage.

ray gage planned for showing by Guardian Paper Co. (Booth 207) A Western product manufactured in Oakland, Calif., the unit employs radioisotopes to electronically measure thicknesses.

These are only highlights of a few of the many displays of today's packaging and materials handling equipment that are planned for the Western Packaging & Materials Handling Exposition, but they are indicative of a show packed full of the results of advanced thinking in these fields. WESTERN INDUSTRY will be there too. See you at the show!

MEETINGS

YOU
SHOULD
PLAN
TO ATTEND

June 25-27—HIGH TEMPERATURE—A TOOL FOR THE FUTURE, three-day symposium on methods, materials, and processes involved in uses of high temperatures in science and industry, sponsored jointly by Stanford Research Institute and University of California, at UC Berkeley, Calif., campus. Contact Nevin K. Hiestler, Stanford Research Institute, Menlo Park, Calif.

June 25-29—AMERICAN INSTITUTE OF ELECTRICAL ENGINEERS, Fairmont Hotel, San Francisco. Contact H. H. Henline, secretary, A. I. E. E., 33 W. 39th St., New York 18, N.Y.

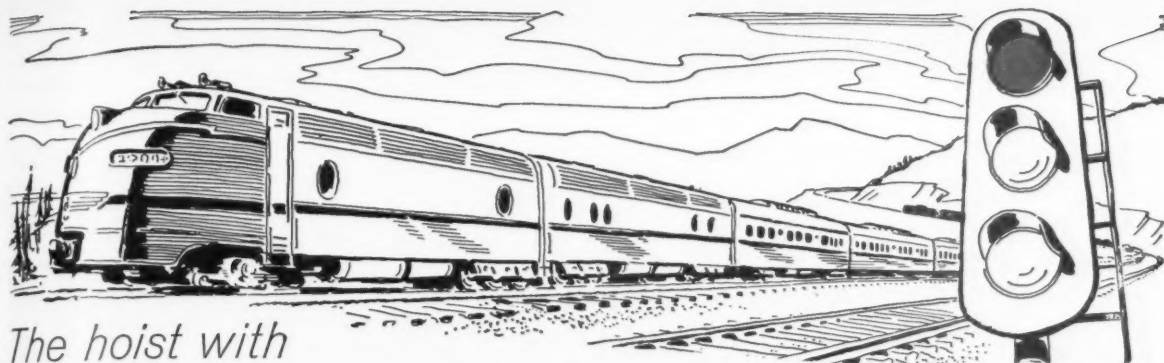
July 10-12—6TH WESTERN PACKAGING AND MATERIALS HANDLING EXPOSITION, Pan Pacific Auditorium, Los Angeles. Contact Clapp & Poliak, 759 Monadnock Bldg., San Francisco 5.

Aug. 5-7—NATIONAL INDUSTRIAL COUNCIL (INDUSTRIAL RELATIONS ASSOCS.), Sheraton-Palace Hotel, San Francisco. Contact Donald L. Mewhinney, director of public relations, 918 16th St., Washington 6, D. C.

Aug. 5-7 — LIQUEFIED PETROLEUM GAS ASSOC., West Coast regional convention and trade show, Sheraton Palace Hotel, San Francisco. Contact M. A. Ennis, West Coast secretary, 1355 Market St., San Francisco 3, Calif.

... continued on page 30

WESTERN INDUSTRY — June 1956



The hoist with

EXPRESS TRAIN BRAKES

It's *Lodestar*[®] of course!



NOW...FOR POSITIVE SAFETY... *this new small electric hoist has ultra-modern dual braking...just like today's streamliner.*

1. Like a train on a steep grade—**AUTOMATIC REGENERATIVE ELECTRIC BRAKING** safely sustains the descending load.
2. For stopping—the **MECHANICAL FRICTION BRAKE** safely locks the load. Any power interruption—intentional or accidental—automatically sets the mechanical brake to hold the load securely.

No other small electric hoist offers this dual electro-mechanical system—THE SAFEST BRAKING AVAILABLE.*

* Lodestar really meets the requirements of the National and all State Safety Codes.



CHISHOLM-MOORE HOIST DIVISION

Columbus McKinnon Chain Corporation
Tonawanda, New York

DISTRICT OFFICES: NEW YORK • CHICAGO • CLEVELAND
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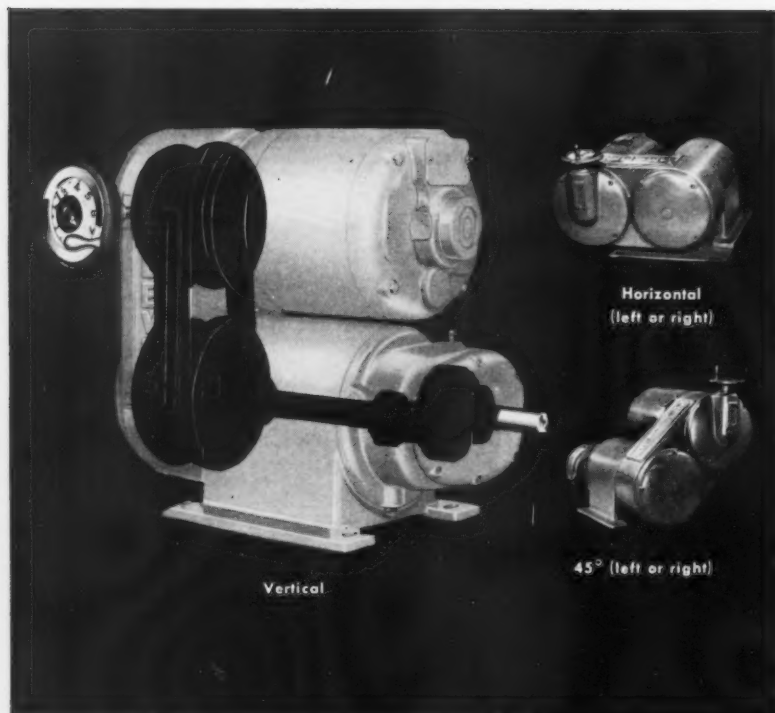
**CALL YOUR CM
DISTRIBUTOR
TODAY**

for catalog, prices or
immediate delivery
of the safer
Lodestar.

CAPACITIES
from 1/8 to 1 ton.
Single and 3 phase.

**Priced at
\$149.50
AND UP
F.O.B. Factory**

A Compact Model to Fit Wherever You Need Variable Speed

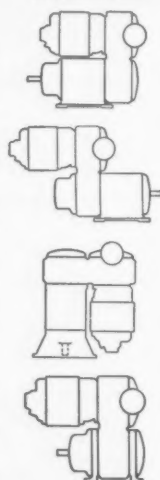


REEVES

FRACTIONAL *Varl-Speed* MOTODRIVE

WHERE DO YOU NEED THE OUTPUT SHAFT?

Motor side, control side,
or vertical down



► REEVES fractional hp. Motodrive is a complete power package, engineered in over 100 assemblies, providing the advantages of variable speed to your machines—in minimum space.

Choose from vertical, 45° or horizontal models in 1/4 to 1 hp. . . get stepless accurate speeds—within a 2:1 to 10:1 range—from as low as 3 rpm to a maximum of 4660 rpm.

Available in standard, weather resistant, totally enclosed or splash-proof enclosures; full range of manual or automatic controls.

REEVES Motodrive—The *right* speed for every need . . . in any place.

Write Dept. 23—M543 for ratings and dimensions
REEVES DIVISION

RELIANCE ELECTRIC AND ENGINEERING CO.

West Coast Assembly Plant • 1525 Adrian Road • Burlingame, Calif.

... for more details, circle No. 24 on Reader Service Postcard

WESTERN MEETINGS

... continued
from page 28

Aug. 6-8—**SOCIETY OF AUTOMOTIVE ENGINEERS, San Francisco.** Contact E. W. Rentz, Jr., Western branch office manager, 714 W. Olympic Blvd., Los Angeles.

Aug. 21-24—**WEST COAST ELECTRONIC MANUFACTURERS' ASSOC. and INSTITUTE OF RADIO ENGINEERS** (seventh region), Western Electronic Show and Convention, Pan-Pacific Auditorium, **Los Angeles.** Contact Herbert Carwin, WESCON, 344 N. La Brea Ave., Los Angeles 36, Calif.

Sept. 4-14—**INTERNATIONAL ASSOC. OF MACHINISTS, A.F.L., San Francisco.** Contact Eric Peterson, secretary-treasurer, Ninth St. and Mt. Vernon Pl. N.W., Washington 1, D. C.

Sept. 10-12—**AMERICAN SOCIETY OF MECHANICAL ENGINEERS**, fall meeting, **Denver, Colo.** Contact A. A. Woodward, Public Service Co. of Colorado, 5525 E. 38th St., Denver.

Sept. 11-13—**PACIFIC COAST GAS ASSOC. ANNUAL MEETING**, Hotel del Coronado, **Coronado, Calif.** Contact Assoc. offices, 2 Pine St., San Francisco 11.

Sept. 16-22—**AMERICAN SOCIETY FOR TESTING MATERIALS**, 2d Pacific Area National Meeting and Apparatus Exhibit, Hotel Statler, **Los Angeles.** Contact Bert Folda, chairman, promotion and publicity committee, c/o General Petroleum Corp., Box 2122, Terminal Annex, Los Angeles 54.

Sept. 17-21—**SYMPOSIUM ON RADIATION EFFECTS ON MATERIALS**, sponsored jointly by Atomic Industrial Forum and American Society for Testing Materials, **Los Angeles.** Contact ASTM, 1916 Race St., Philadelphia 2, Pa.

Sept. 19-21—**PORCELAIN ENAMEL INSTITUTE, INC.**, 25th annual meeting, The Broadmoor, **Colorado Springs, Colo.** Contact Porcelain Enamel Institute, 1145 19th St. N.W., Washington 6, D. C.

Sept. 23-29—**NATIONAL ASSOC. OF ELECTRICAL CONTRACTORS**, national convention, **San Francisco.** Contact Clint J. Harder, secretary-treasurer, 1200 18th St., N.W., Washington 6, D. C.

Sept. 26-28—**AMERICAN INSTITUTE OF MINING & METALLURGICAL ENGINEERS**, third annual Rocky Mountain Minerals Conference, Newhouse Hotel, **Salt Lake City.** Contact R. B. Coleman, 600 W. 33rd St., Salt Lake City, Utah.

Sept. 26-29—**NATIONAL ELECTRICAL CONTRACTORS ASSOC.**, convention, **San Francisco.**

Oct. 1-4—**AMERICAN MINING CONGRESS** (Metal Mining-Industrial Minerals Convention and Exposition), Shrine Exposition Hall, **Los Angeles.**

Oct. 16-18—**35TH PACIFIC COAST MANAGEMENT CONFERENCE**, "Building the Management Team," practical company experiences used to get strong team results on principal levels of management, **Claremont Hotel, Berkeley, Calif.** Contact California Personnel Management Assoc., 2180 Milvia St., Berkeley.

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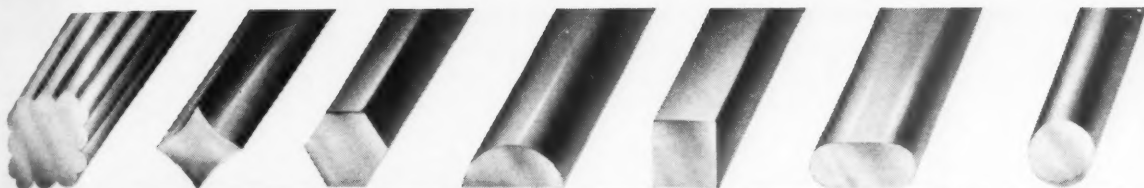
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n page 33

ne 1956



A HANDFUL OF CHIPS ...

tells the **COST-CUTTING** story of
Chase® FREE-CUTTING Brass Rod!

Take a close look at the typical chips machined from Chase Free-Cutting Brass Rod. See how short, brittle and tightly curled they are. They could only have come from rod that permits really high cutting speeds and heavier feeds *without gumming or jamming!*

Such remarkable chips also indicate the *quality at low-cost of finished pieces* machined from Chase Free-Cutting Brass

Rod. Smoother, cleaner pieces that take precision threads and sharp knurls—require less polishing—and simplify lacquering, enameling or plating.

The Chase warehouse near you stocks standard mill lengths in many different cross-sections. Special shapes that *save even more* machining time can be made to order.

Write, wire or phone today!

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**ARE YOU STILL
DOING THIS
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**YOU'LL DO IT FASTER
— EASIER — AT LESS COST
WITH THE**

**Milwaukee
ELECTRIC HAMMER**

Model H-834A

\$125.00

COMPLETE WITH

Star drill chuck . . . Drift key . . .
Retaining spring for chisels . . . Bull
point . . . Cold chisel . . . Brick-
cleaning chisel . . . Mortar-cutting
chisel . . . 8 Star Drills — 1/4",
5/16", 3/8", 7/16", 1/2", 5/8",
3/4", 7/8" . . . Grease gun and
grease . . . **ALL-STEEL
CARRYING CASE.**



**3000 Blows per minute..Hammers 1/2" holes
3 1/4" deep in concrete, in one minute**

Unmatched for hammer-drilling holes up to 7/8" diameter in concrete and masonry, the Milwaukee Electric Hammer makes it easy to hang switch panels, boxes, and transformers, or bore holes through concrete walls for conduit or cable, in minutes. Ideal for repointing brick and stone, cutting channels in concrete, stone and brick

walls and floors, and also for setting anchors, plugs and expansion shields. Shipping wt. 26 lbs.

MODEL H-834 . . . LIMITED HAMMER-KIT
. . . complete with Star drill chuck, 1/2" Star Drill, Drift key, Tool retaining spring, Grease gun, Grease, and All-Steel carrying case . . . **\$110.00**

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Main Plant and Office

Milwaukee 8, Wisconsin

SAN FRANCISCO

1242 Market Street

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WESTERN MEETINGS

**. . . continued
from page 30**

Oct. 31-Nov. 1—1956 WESTERN AREA DEVELOPMENT CONFERENCE, "Resources for Industrial Expansion" theme, co-sponsored by Stanford Research Institute and Confederacion de Camaras Industriales de los Estados Unidos Mexicanos (a Mexican industrial association), Hotel Westward Ho, **Phoenix, Ariz.** Contact Charles L. Hamman, Assistant Director, Economics Research, Stanford Research Institute, Menlo Park, Calif.

Nov. 1-3—NEW MEXICO MINING ASSOC., convention, **Carlsbad, N. Mex.** Contact J. B. Knebel, president, P. O. Box 1125, Santa Fe, N. Mex.

Nov. 12-14—PACIFIC LOGGING CONGRESS, **San Francisco.** Contact Carwin A. Woolley, 1222 American Bank Bldg., Portland 5, Ore.

Nov. 30-Dec. 1—NORTHWEST MINING ASSOC. CONFERENCE, Davenport Hotel, **Spokane, Wash.** Contact Karl Jasper, Radio Central Bldg., Spokane.

1957

Mar. 4-6—ASSOC. OF IRON & STEEL ENGINEERS, regional meeting, **San Francisco.** Contact T. J. Ess, managing director, 1010 Empire Bldg., Pittsburgh 22, Pa.

Mar. 25-29—AMERICAN SOCIETY FOR METALS, tenth Western Metal Exposition and Congress, Pan-Pacific Auditorium and Ambassador Hotel, **Los Angeles.** Contact W. H. Eisenman, managing director, 7301 Euclid Ave., Cleveland 3, Ohio.

June 9-13—AMERICAN SOCIETY OF MECHANICAL ENGINEERS, semiannual meeting, Sheraton Palace Hotel, **San Francisco.**

June 18-20—TRIPLE INDUSTRY SUPPLY ASSOC., national meeting, **San Francisco.** Contact Robert C. Fernley, secretary, National Industrial Distributors Assoc., 1900 Arch St., Philadelphia 5, Pa.

Aug. 18-25—WESTERN ELECTRONIC SHOW & CONVENTION, **San Francisco.** Contact Mal Mobley, Jr., business manager, 344 N. La Brea, Los Angeles 36, Calif.

RESEARCH AND TESTING OF MATERIALS will be thoroughly covered in technical sessions scheduled to be held at the second Pacific Area National Meeting of the American Society for Testing Materials at the Hotel Statler in Los Angeles, Sept. 16-21. Among the wide variety of materials that will be reported on are lubricants, titanium, electro-deposited metallic coatings, industrial water, plastics, and cement-concrete.

Several industry luncheons that have been planned in conjunction with the meetings will feature talks by prominent men and will cover subjects of interest to the group in the fields of petroleum products, wood, paints, soils, water, etc.

For more information, contact Bert Folda, chairman, promotion and publicity, c/o General Petroleum Corp., Box 2122, Terminal Annex, Los Angeles 54.

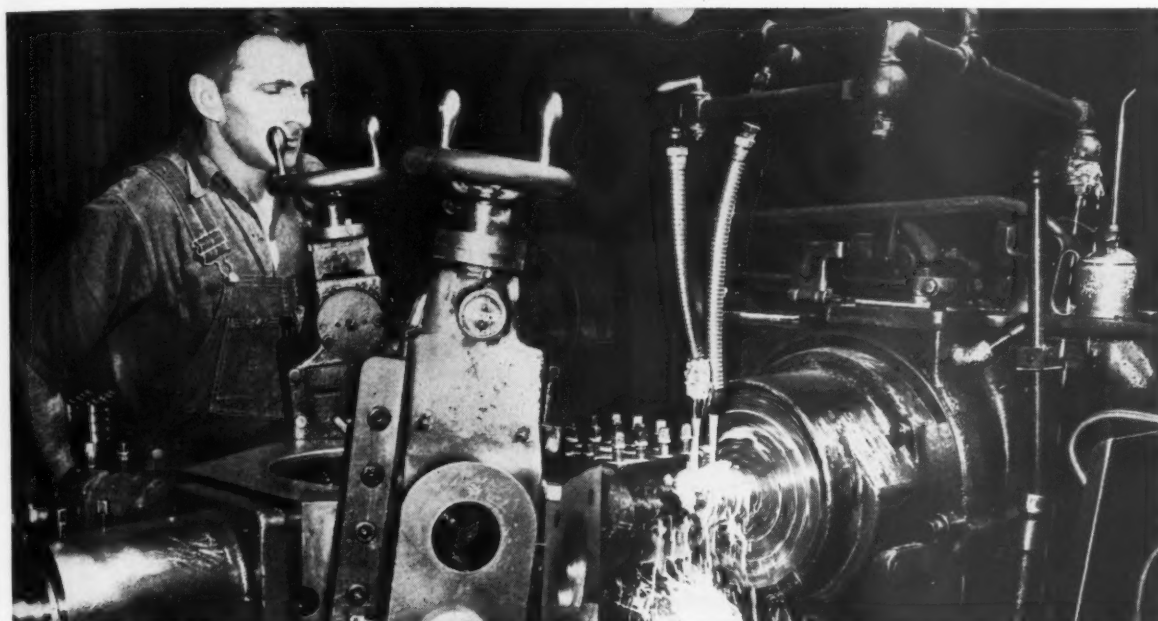
Standard Engineer's Field Report

CASE HISTORY

Calol Cutting Fluids
LUBRICANT

Lamson Mobilift Corp.,
FIRM *Portland, Oregon*

Low-cost cutting fluids save time and money on machine tool operations



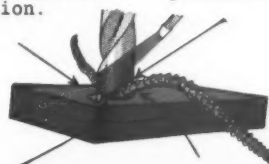
AFTER TESTING many different cutting fluid solutions, Lamson Mobilift Corp. selected Calol Cutting Fluids for all machining operations. This Warner & Swasey 3A Turret Lathe (above) is drilling and forming generator gears, using Calol Soluble Oil. Unit operates at a surface speed up to 300 feet per minute and can handle any stock up to 16" in diameter. Plant Foreman Lloyd McCartney reports: "Of all the products we've tried, Calol Cutting Fluids do the best job of keeping tools and work cool. Be-

cause of this, they've speeded up our machining operations and save us time and money." This company manufactures all components, including engine parts, for their Mobilift fork trucks. Other Calol products in use are Calol Cutting Oil 33DA and Calol TR Compound on tapping machines.

Why Calol Cutting Fluids solve metal-cutting problems

Specialized products for every metal-cutting operation.

Additives resist rusting, corrosion, pressure.



Flush away cuttings readily.

High cooling and lubricating qualities. Very stable.



TRADEMARK "CALOL" REG. U. S. PAT. OFF.

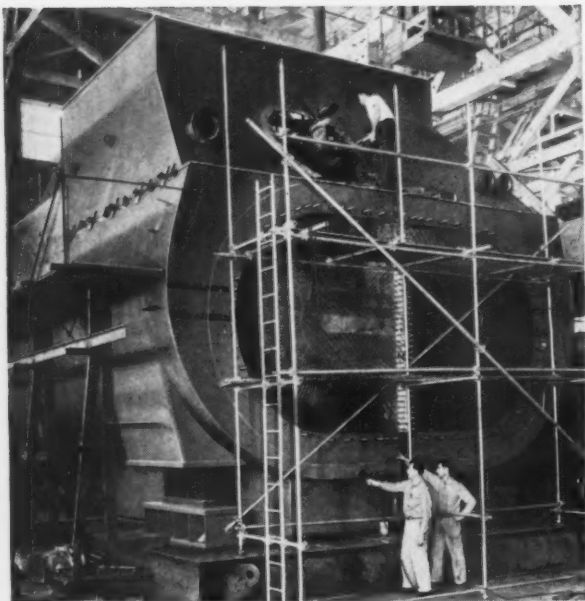
Free Folder on Improved Calol Cutting Fluids sent on request to Standard Oil Company of California, 225 Bush St., San Francisco, California.

For Expert Help on lubrication or fuel problems, call your Standard Fuel and Lubricant Engineer or Representative, or write to 225 Bush Street, San Francisco, California.

STANDARD OIL COMPANY OF CALIFORNIA

... for more details, circle No. 27 on Reader Service Postcard

THEY'RE BUILDING THE WEST ...WITH KAISER STEEL



WESTINGHOUSE ELECTRIC, Sunnyvale, California, the West's largest electrical manufacturing plant, produces everything from a quarter inch gear to the world's largest rotating machine. The huge steam turbine condenser shown at left, made with steel sheet and plate, is one of the largest ever built in the West.

NORRIS-THERMADOR, Los Angeles, has produced over 14,500,000 auto wheels—almost every car assembled in the West rolls on them. A user of large quantities of Kaiser Steel hot rolled sheet and strip, Norris-Thermador manufactures compressed gas cylinders, plumbingware, ordnance equipment and electrical heating and cooking appliances.



THESE MANUFACTURERS are playing an important role in the vigorous growth of the West. They are among the hundreds of western manufacturers who rely on Kaiser Steel's close-at-hand supply of diversified steel products. In the past twelve years, western population has increased over 40%—and the growth of western manufacturing has been even greater. In the same short time Kaiser Steel, the West Coast's only fully integrated steel plant, has more than tripled production, thus playing a major part in making western growth possible.

 **Kaiser Steel**
built to serve the West

Steel Mill Products: plates • hot rolled strip and sheet • cold rolled strip and sheet • tin plate • continuous weld pipe • electric weld pipe • alloy and carbon bars • bar shapes • structural shapes • semi-finished steels • pig iron • ingot molds • coke by-products • **Fabricating Division:** steel fabrication for construction, aircraft, missile and other industries • expanded fusion weld pipe • reinforced concrete pipe • tanks • For specifications, write: **KAISER STEEL CORPORATION** • Los Angeles • Oakland • Seattle • Portland • Phoenix • Denver • Tulsa • New York

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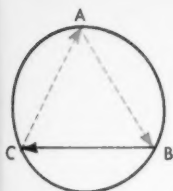
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Type A phase failure relay protects a 3-phase motor against loss of a phase.

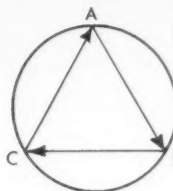


Type B phase failure and phase reversal relay protects a 3-phase motor against loss of a phase and reverse phase rotation.



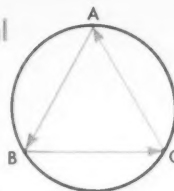
Phase Failure

This relay is sensitive to current in all lines to the 3-phase motor. If one current fails or becomes much less than current in other 2 lines, relay opens control circuit. Protects motor against failure of a phase on primary side of distribution transformer supplying motor, even tho it has wye-delta windings.



Phase Reversal

In addition to phase failure, this relay detects phase sequence and opens motor control circuit when a phase has been reversed.



RELIABLE PHASE FAILURE OR PHASE REVERSAL PROTECTION

The Bulletin 812 Type A phase failure relay is a static device which compares the currents in each of the three lines supplying a motor from a 3-phase system. In case the current in one line fails or becomes much less than that in the other two lines, the relay operates to open the control circuit to the starter which disconnects the motor from the line and prevents it from running single phase.

Both the Bulletin 812 Type A and Type B relays operate over a wide range of current, and thus coils do not have to be accurately selected for the precise current being drawn by the motor. These relays will function accurately for currents from no load to locked rotor.

The control circuit contacts are opened in three or four cycles

after a phase failure occurs, and thus the relay can be used to protect against the failure of a motor to reverse. In the event of a single phase or of a phase failure, the Bulletin 812 relays will operate dependably because the construction does not include frail or moving parts, especially in the sensitive portion of the system. There are no delicate parts to get out of adjustment, or bearings which might stick and cause faulty operation.

The Bulletin 812 relays are built in only four sizes and will reliably protect motors with full load currents from 1.25 amperes to 300 amperes against phase failure and phase reversal. Let us send you more detailed information about this up-to-date answer to phase failure and phase reversal problems!

Allen-Bradley Co.
1316 S. Second St.
Milwaukee 4, Wis.

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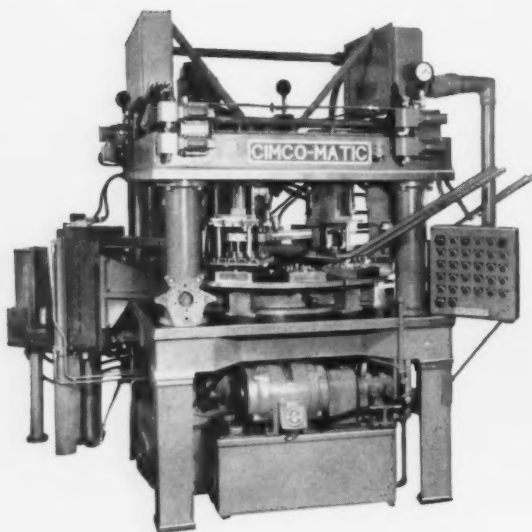
PHASE FAILURE & REVERSAL RELAYS

In Canada—Allen-Bradley Canada Ltd.
Galt, Ont.

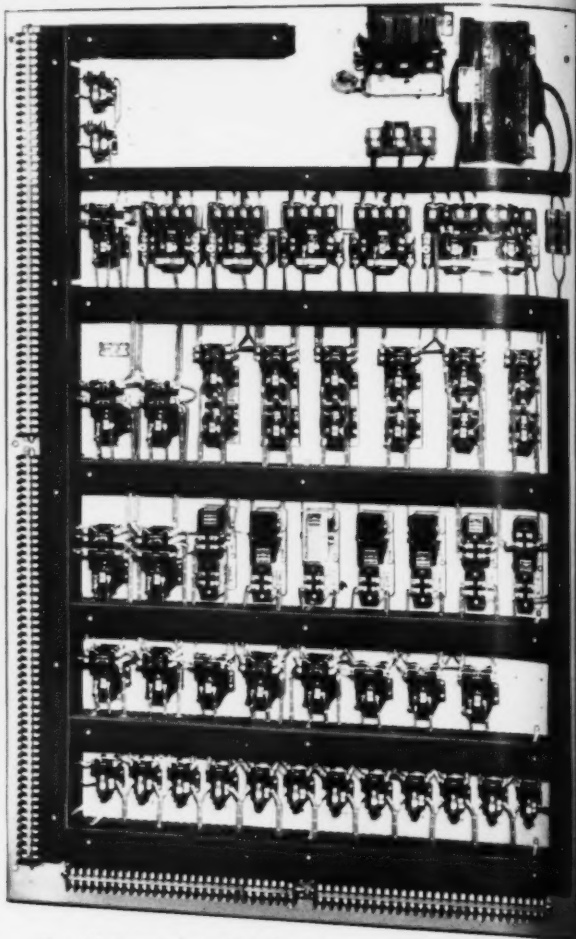


Automatic machinery speeds up production... but to obtain the full benefit, the electrical control components must be trouble free. Therefore, leading machinery builders favor Allen-Bradley controls. They have found that A-B controls satisfy all operating requirements. The simple one-moving-part design is your guarantee of trouble free performance. You help yourself when you specify "Allen-Bradley."

Send for the A-B Handy Catalog.

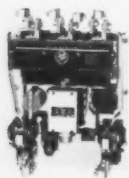


Cimco-Matic machine for automatically assembling Chrysler inner brake plates.



Cimco-Matic control panel includes over 40 A-B starters, relays, timers, etc.

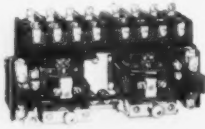
Some Allen-Bradley control items—universally recognized for trouble free operation



Bul. 709 Size 7 solenoid starter for 300 hp, 220 v; 600 hp, 440-550 v motors.



Bul. 709 Size 1 solenoid starter for 5 hp, 220 v; 7½ hp, 440-550 v motors.



Bul. 705 Size 1 reversing switch with switches electrically and mechanically interlocked. Available in 9 sizes for motors up to 300 hp, 220 v; 600 hp, 440-550 v.



Bul. 704 Size 1 hum-free contactor with magnetic latch.



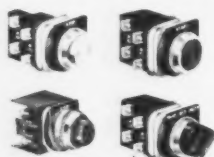
Bul. 702 Size 2, 50 ampere solenoid contactor.



Bul. 700 Type C solenoid relay, rated 10 amp, 600 v, max.



Bul. 700 BX, 4 pole universal relay with N.O. & N.C. contacts.



Bul. 800T oillight operating units for machine tool service. They are available in many handy forms.



Bul. 800T 5 button pendant station.



Bul. 800T oillight control station for machine tool service.



Bul. 894 disconnect with visible contacts for combination starters and control panels.



Bul. 806 rotary pilot switch, 15 & 25 amp, 600 v.



Bul. 802T adjustable lever oillight limit switch.



Bul. 849 timers available in wide variety of types. Adjustable from 1/6 sec. to 3 min.

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BX, 4 pole
relay with
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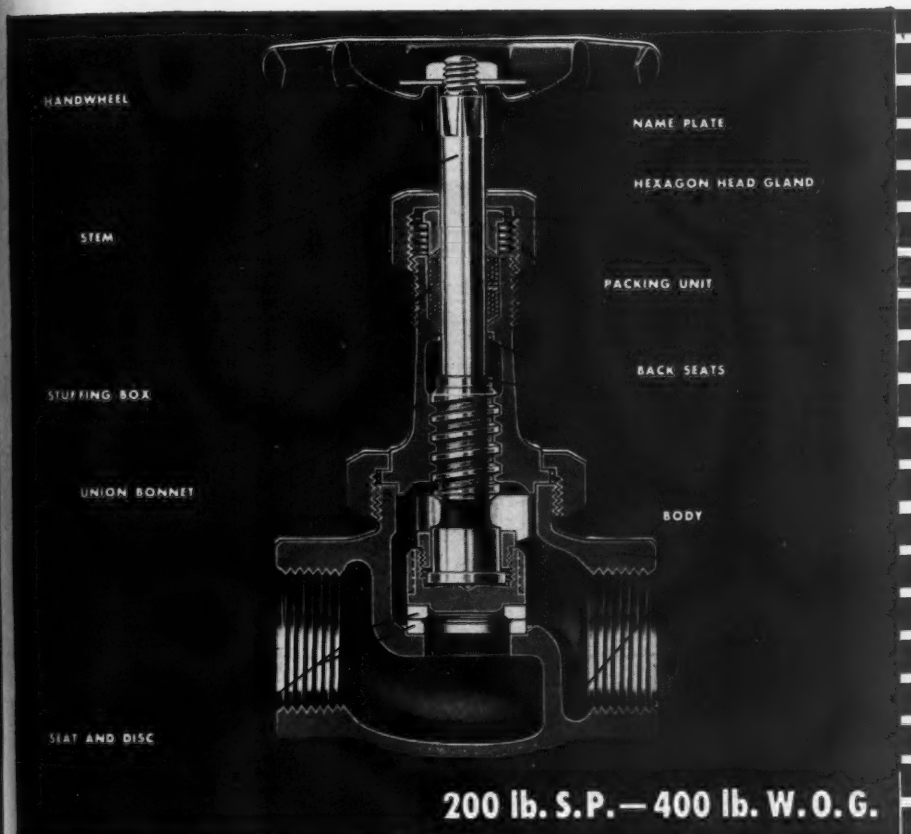
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NOW...for HIGHER PRESSURES

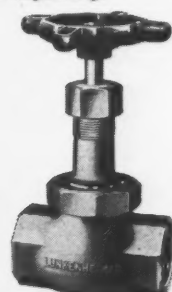
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200 lb. S.P.
400 lb. W.O.G.



New exclusive Brinalloy* seat and disc are far more resistant to wear and corrosion than 500 Brinell Stainless Steel. They're fused in to stay — will never require replacement or regrinding!



This new LQ600 valve design has more modern design features than any other bronze valve. Exterior looks different and is different — inside are all the outstanding features described at the left!

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Now available for immediate delivery — this new big brother of the famous Lunkenheimer LQ600-150 Valve gives you the same revolutionary dependability for your toughest, *higher pressure* jobs. Engineered with the same basic design features including the new Brinalloy seat

and disc — it's made with special "S-1" Bronze to withstand higher pressures. Severe tests show no leakage, erosion or wire drawing...no need for repair or replacement. Pays cash dividends in maintenance savings — year after year!

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I'm interested in further details about the two new LUNKENHEIMER LQ600 valves

Please have your Republic representative call me.

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June 1956 — WESTERN INDUSTRY

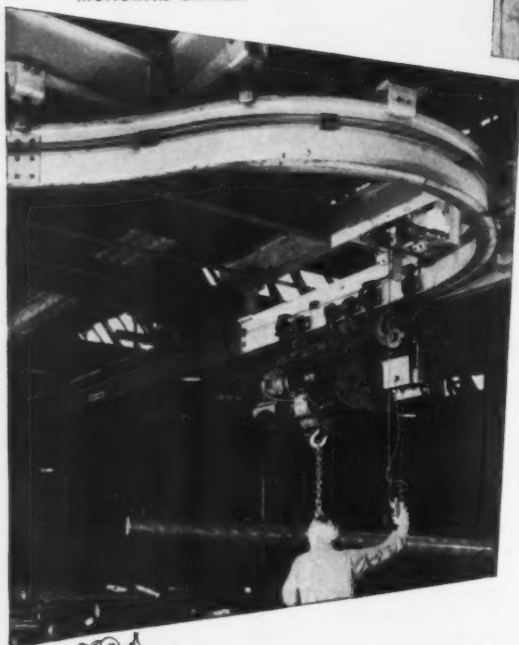
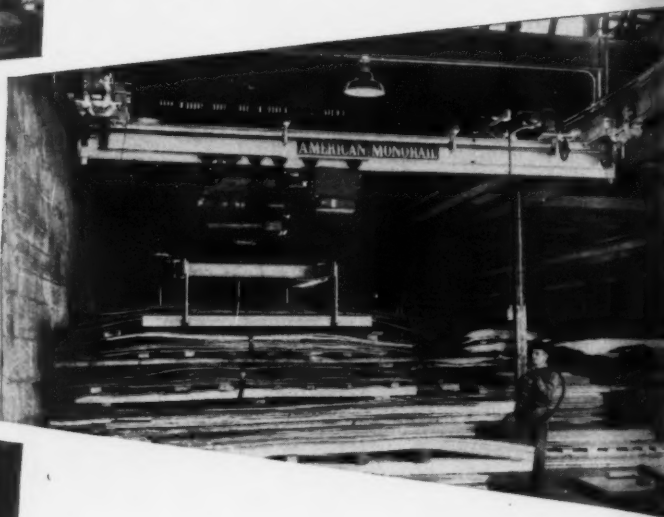
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**MONORAIL
SPECIFICATIONS**
for
**MAXIMUM SAFETY
MINIMUM MAINTENANCE**

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The guide represents the efforts of the combined experience of all the engineers of the association members. The specification guide has just been published.

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FAST IN TRAVEL

The Hyster QN-20 Lift Truck saves valuable time in stacking and in transit—but saves even more time for these other reasons:

Less time out for maintenance—rugged construction greatly reduces “downtime”. Easy steering gives driver more confidence. Unusual maneuverability, permits truck to get around faster through crowded quarters inside and outside.

The Hyster QN-20 is saving time (which is money) for many businesses in this area. Why not for you? We can put a QN-20 on your job NOW on terms to suit you—



FAST IN STACKING

with or without down payment—or you can lease from one to five years. We can work out a “personalized” finance plan that will make it possible for you to pay off your Hyster out of the savings it makes for you. Why not call us today? We will show you how a Hyster QN-20 can save time on *your* job.

COMPARISON OF SPEEDS	HYSTER QN-20	TRUCK A	TRUCK B	TRUCK C	TRUCK D
MAX. TRAVEL SPEED (MPH)	12	8.5	8.5	9	10
LIFT SPEED LOADED (Feet per min.)	55	44	40	37	40



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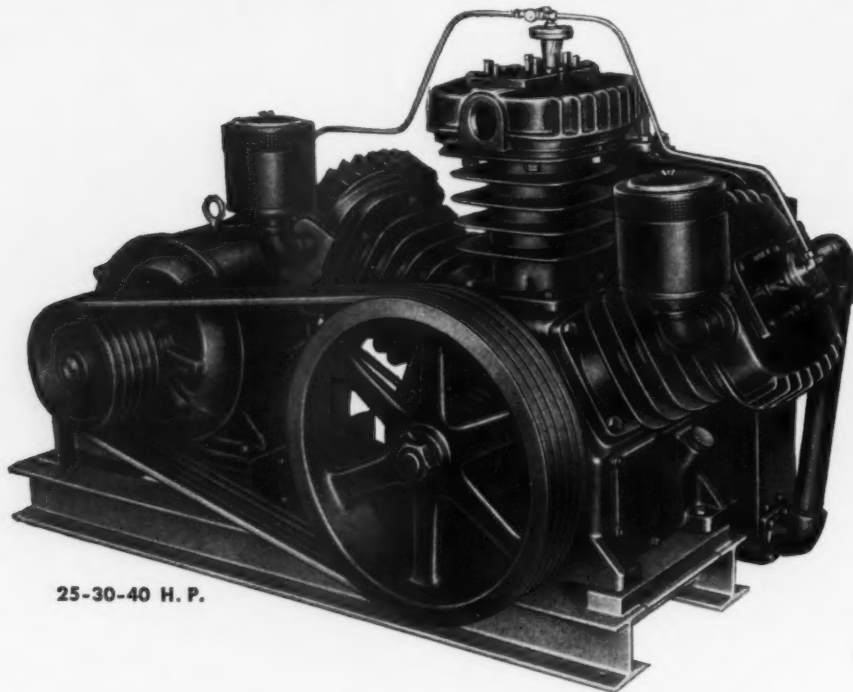
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TWO-STAGE, AIR-COOLED AIR COMPRESSOR

**Provides Higher Operating Efficiency
Costs Less to Install**



25-30-40 H. P.

THIS NEW Curtis Two-Stage will deliver more air per minute, per horsepower and per kilowatt hour of electrical energy consumed, thus assuring a saving in your electrical bill.

It's Air Cooled, thereby eliminating expensive water bills and assuring quick and easy installation with no complicated plumbing problems.

The new C-100 embodies all the well-known Curtis engineering features such as centro-ring oiling and Timken Main Bearings.

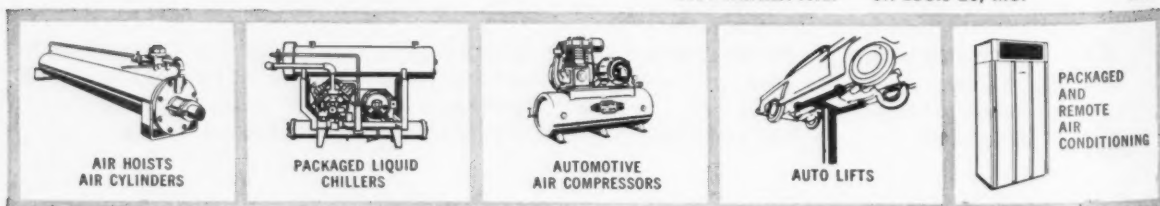
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MANUFACTURING COMPANY • PNEUMATIC DIVISION

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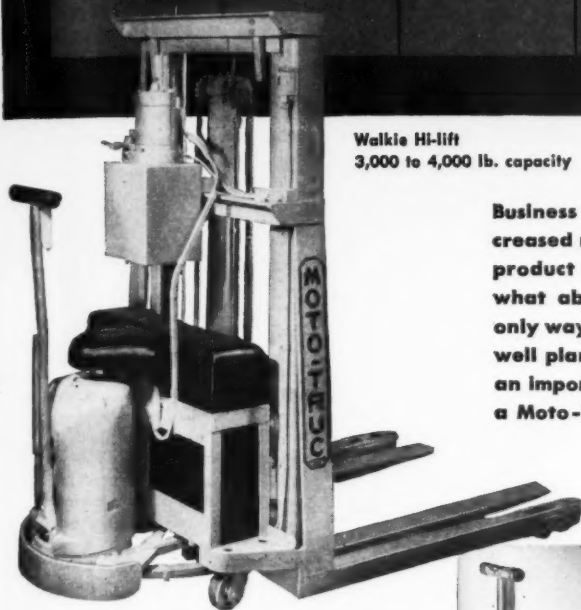
CM-23



MOTO-TRUC can reduce costs... without reducing... product Quality!

MATERIAL

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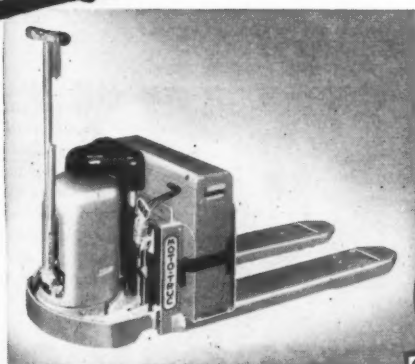


Walkie Hi-lift
3,000 to 4,000 lb. capacity

Business in general is faced with the continuing problem of increased material and labor costs. The easy way out is to raise product prices or reduce costs by reducing quality... but what about your competition and product acceptance? The only way to reduce costs without reducing quality is through a well planned materials handling system. Moto-Trucs can play an important part in your future... and remember... There's a Moto-Truc for every purpose... SEND FOR BULLETIN #53.



Rider Hi-lift
3,000 to 4,000 lb. capacity



Walkie Model Pal
4,000 to 6,000 lb. capacity



The MOTO-TRUC Co.
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Pallet... Platform... Hi-Lift Trucks
The Originators of the Walkie and
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REMINDER LIST

of maintenance steel products

You can save time and trouble in the weeks ahead if you will take a minute now to review your coming requirements for maintenance steel products—those you will want for summer shut-down work as well as your more immediate needs.

All the products listed below are in good supply at Ryerson right now, and, of course,

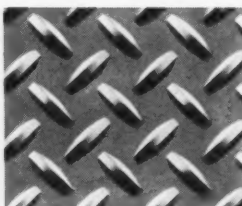
we have many other maintenance products ready for quick shipment as well—boiler tubes, chain and accessories, tool steel, etc.

When you combine all maintenance steel requirements on one order you may save more than purchasing time. Freight costs may be lower, and prices, too, under the Ryerson quantity differential plan.

Perhaps this list will suggest ways to plan ahead and save

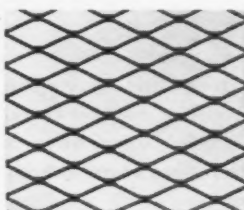


◀ **COLD FINISHED SHAFTING**—Ryerson stocks of turned, ground and polished bars (C-1025, C-1045 and C-1141) provide a ready source for shafting of outstanding size accuracy, straightness and concentricity. For greater strength draw on Ryerson stocks of heat treated Rycome—a medium carbon alloy.

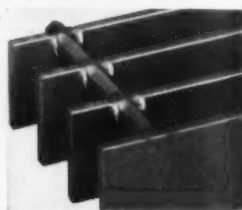


◀ **SAFETY PLATE**—Tough, rolled steel plate with the Inland 4-WAY safety pattern is available in two pattern sizes for industrial flooring, stairs, ramps, platforms, etc. Firesafe, long wearing, easy to clean, it provides good traction for feet or wheels and presents an attractive appearance. Easy to fabricate and install.

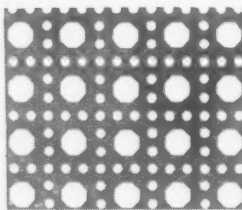
▶ **EXPANDED METAL**—Furnished in two basic types, standard and flattened, Ryex expanded metal is light yet strong and rigid—easy to handle because all sharp edges have been removed. Use it for room enclosures, machine guards, grilles, shelves, bins, etc. Also available: Ryex expanded metal grating.



▶ **WELDED GRATING** for strong, rigid and durable open steel flooring is available from Ryerson in stock size panels and sizes tailor-made for your job with all necessary cut-outs and banding. Easily installed and maintained, Ryerson welded grating can be furnished painted or galvanized. Send for engineering data.



▶ **STAINLESS PIPE & TUBING** and fittings as well, are on hand in a complete range of types—304, 316 and 304-L for welding applications involving severe corrosion, and in a comprehensive range of sizes including schedules 5, 10, 40 and 80 pipe sizes. Valves and welding and screwed type fittings also available.



▶ **PERFORATED SHEETS** are on hand for immediate shipment in standard cane and machine guard patterns. And you can also get quick service on a wide variety of other patterns perforated to order from large Ryerson stocks of carbon steel and stainless sheets and plates. Send for descriptive literature.

▶ **GALVANIZED SHEETS**—Tight-coated galvanized that forms without flaking is available in a wide range of gauges and sizes. Sheets take paint or lacquer readily without "weathering." And for roofing, siding, etc. they can be furnished with standard corrugation or with the attractive new mansard corrugation.



▶ **GLYCO BABBITT METAL AND RYERTEX BEARINGS**—Glyco Babbitt, produced in our own foundry from top quality virgin metals, is available in five grades to meet every babbitt bearing requirement. Ryertex plastic bearings which need only water lubrication can also be furnished promptly—in any size or shape.



RYERSON STEEL

In stock: Bars, structurals, plates, sheets, tubing, alloy and stainless steel, re-bars, machinery and tools, etc.

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LOS ANGELES—Plant: 4310 E. Bandini Blvd. Mail: Box 3817, Los Angeles 54. Phones: ANgelus 2-6141, from San Diego, (no toll) ZENith 6660.

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Phones: OLYmpic 3-2933, DOuglas 2-4211.

SEATTLE—Plant: 1200 - 4th Ave. South. Mail: Box 3525, Seattle 24. Phone: SEneca 2300.

SPOKANE—Plant: North 207 Freya St. Mail: Box 2158, Spokane 10. Phone: KEystone 5-1581.

... for more details, circle No. 36 on Reader Service Postcard
WESTERN INDUSTRY — June 1956



JUNE 1956 annual plant maintenance & engineering issue

NEEDED IN THE WEST:

Sound maintenance foundations for shaky production superstructures

IT IS UNFORTUNATE that far too few Western plants have yet recognized the importance of systematic maintenance skillfully administered. In one way, it has been a forgivable oversight—primary emphasis in every Western manufacturing center during the past few years has been on rushing pell-mell into production to satisfy booming market demands. Plant and equipment decisions have been finalized with inattention to maintenance requirements, simply because there was no opportunity to have a trained maintenance engineer participate in these decisions.

Next year, and in the years after, it will be an unforgivable and costly oversight—liable to be dearly paid for in decreasing production efficiency and damage to competitive position. For it is an unavoidable fact that maintenance is looming ever larger as a key function in the successful operation of any manufacturing plant, ranking in relative importance with production, purchasing, research, and other major plant departmental activities.

The trends are readily apparent in bellwether plants and industries. In many, maintenance employees actually now outnumber production workers. Maintenance supervisors, once low on the pay scale and lacking prestige in the plant, are being paid better and afforded more recognition. Firms are searching out men with increased skills for maintenance. And overall, in well run and more automatic factories, there is apparent a rapid shift in emphasis in the types of work maintenance departments are handling.

These trends are creating definite responsibilities at two points within Western plants. First, at the management level, where there must be a recognition of the new and important roles of maintenance in attaining operating efficiency. And second, for the men in maintenance who must not only devise effective ways to do maintenance jobs better but also to convince their managements of the importance of the maintenance function.

Material in this issue, providing the latest thinking on maintenance and plant engineering subjects of particular interest to the West, reflects many different facets of the changing face of maintenance. For maintenance men, a storehouse of proven ideas is provided; for management men, it presents an opportunity for study and thoughtful consideration of those cost savings that are possible only through systematized maintenance.



SAFETY IN NUMBERS is Canco's theory in maintaining adequate stocks of electric motor replacements.



MATERIALS TOO must be stocked on a large scale to meet moment's-notice needs.

Sharpen up stock control set-up

That's how American Can stays on top of the "supply battle" in its Seattle, Wash., production-deadline plant.

PLANT management and maintenance people at American Can Co.'s Seattle, Wash., plant—producers of over a half billion cans per year—have a double-barreled supply problem to face. Suppliers of plant equipment in the Northwest often find it difficult to stock replacement parts and sometimes have to place rush orders on San Francisco, Los Angeles, or Eastern suppliers to fill the emergency needs of local plants. But even

LEAST OF PROBLEMS are Canco's lift trucks, but occasionally lift parts and castings are out-of-stock.

an emergency order can require two or three days delivery time.

American Can's production can't be halted for two or three days; for that matter, it can't even be slowed during production seasons. Can manufacturer's policy is to guarantee delivery of cans to food processing plants as ordered prior to their season. A shortage or delay in can delivery could cause the loss of thousands of dollars for the food canner or packer. However, under the contract between can manufacturers and food packers, the burden of loss is placed upon the can companies.

Average employment at this Seattle plant is 550 persons. Here are some examples of the quantity and types of equipment that must be kept operating in the 618,000-sq. ft. plant: 1,280 electric motors ranging from fractional to 15 hp., 32,586 ft. of cable conveyor, 23 gas and electric lift trucks. The plant uses more gas than any other gas consumer in the city and the latest connected electric horsepower figures amount to a total of 2,537 hp.

American Can's answer to maintaining peak production, even though supply of parts and replacement units

is far from being as effective as in larger industrial centers, are equipment standardization and over-stocking. However, due to the nature of production, equipment can only be standardized by application. For example, applications of drive equipment are held as close to a predetermined standard as possible.

Lift trucks have been held to two models and two capacities. Lift capacities have been minimized to 2,000- and 5,000-lb. units to discourage overloading. While supply for motor parts, tires, etc., is good, lift parts and castings are often out of stock at local suppliers warehouses.

Ned Pilsbury, plant manager at Canco's Seattle plant, states that the only real prevention of non-scheduled down-time is obtained through stocking enough replacement equipment to insure an adequate supply of parts at all times. Except with new pieces of equipment in the plant, breakdowns are practically charted events. The maintenance department can tell, almost to the week, when a certain piece of equipment or part will need replacing. Therefore down-time is planned. Coupled with the higher-than-average stock of equipment, this experienced



The men who share your supply problems

Successful plant operation requires sound consideration of economics when it comes to the determination of how many replacement units and spare parts to keep on hand. Trick is to avoid down-time losses by stocking *just enough* spares to make immediate replacement of equipment parts that fail.

If it is possible to draw upon warehouse stocks of nearby industrial equipment suppliers for emergency needs, necessary investment in replacement stocks can be held relatively low. Such reliance upon speedy service from local suppliers is standard practice for plants in large industrial centers of the East, and it is practicable too in a few Western metropolitan areas. However, plants in the West's smaller and more remote industrial areas have had to find other means for achieving replacement economies. Local suppliers in these areas cannot afford to provide extensive stocking service—too much of their limited

capital, tied up in replacement parts, would have a slow turn-over.

The industrial distributor naturally has his own set of economic policies to follow. Failure to adhere to sound policies could quickly mean business failure and no service at all.

These are reasons why it is so noteworthy that industrial distributors in the West's "supply problem" areas, unable to maintain enormous and varied stocks of replacement equipment, are instead providing other extraordinary services. For example, Western distributors in the more remote areas again and again go all out to obtain out-of-stock items by the most expedient means in emergency cases, often absorbing the extra costs incurred. And they are notable in their capabilities for employing their own engineering knowledge to help customers reach temporary solutions to pressing equipment breakdown problems.

Supply problems found in plants such as those depicted in the two case history articles on these pages are certainly not supplier-caused; they are supplier-shared.—Ed.

planning permits American Can to continue its guaranteed-delivery contract with canners.

Of course, planning down-time and forecasting equipment troubles requires careful recording of maintenance work. And, once recorded, the data obtained must be equated to equipment requirements for forthcoming production periods. Then, as parts are used during production repairs, replacements must be re-ordered to maintain a predetermined minimum quantity in stock.

This responsibility—perhaps it should be tagged "headache"—falls upon the shoulders of the stock room superintendent. Here, as he explained it to a WESTERN INDUSTRY editor, are the formulae and systems used by George Benson who carries that responsibility for Canco's Seattle plant.

"Cans for food and non-food products must be delivered on schedule. There is no room in an operation like ours for us to wait until a breakdown occurs and then try to obtain parts to fix it. The parts—or materials to make them—must be on hand at all times, so that down-time on production and materials handling equipment can be pre-scheduled or held to a minimum if repairs have to be made suddenly," Benson emphasized.

"On many items, particularly small parts, we take an average of the re-

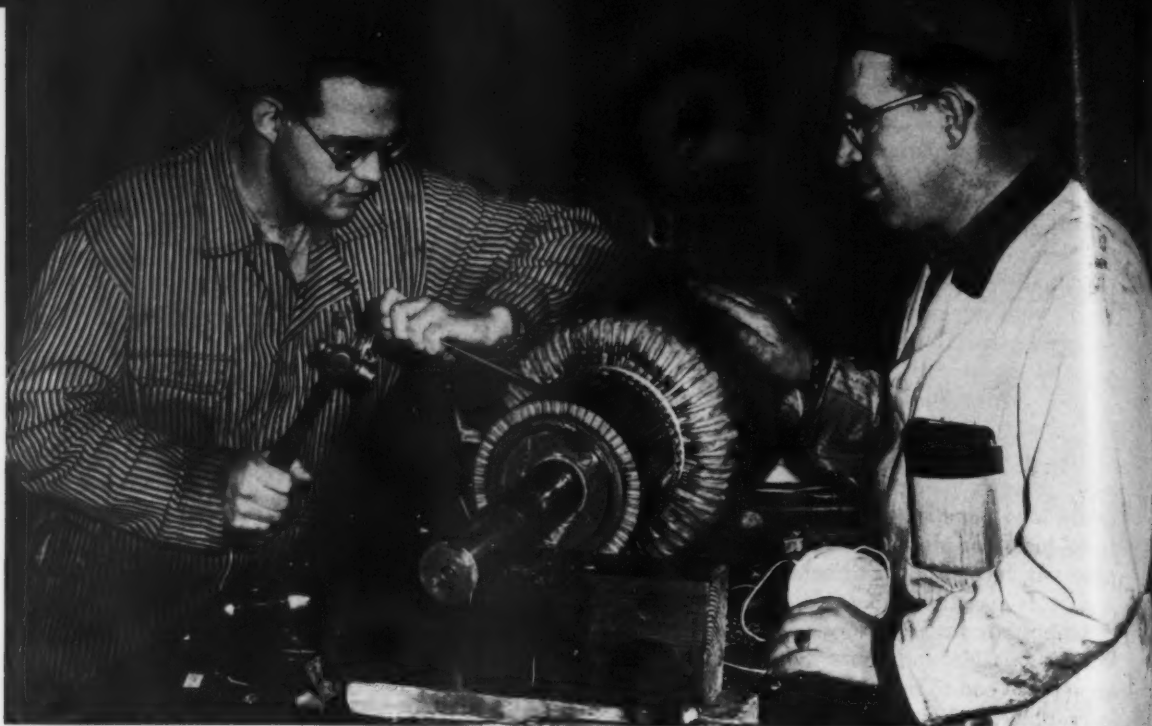
placement requirements over the past three years—then we will take 50% or some other proportion of that figure as a normal inventory, based on the level of present and future operation as our production and maintenance specialists see them. The formula may vary, but the important thing is that on each item we have a specific plan to guide us at all times," he added.

American Can manufactures much of its production equipment for its

many plants in various centrally located shops. Much of it is fabricated of stainless steel and maintenance men in the can plants use raw stock for repair work. However, obtaining stainless steel plate and tube stock often presents a problem in the Seattle area so, prior to heavy production or maintenance periods, the plant stocks up on the materials needed. Small emergency stocks are maintained at all times.

MACHINE REPAIRS				OAM-15			
CLASSIFICATION				CODE NUMBER			
DESCRIPTION	QAM-15	DIE CUT EDGES	10	20	30	40	50
AVG. COST	2.30	2.30	2.30	2.30			
UNIT	EA.	EA.					
DATE	1-2-54	3-3-54	7-1-54	10-1-54			
PURCHASE RECORD				SHIPPING OR RECEIVING			
DATE	Purchase Order No.	QUANTITY ORDERED	BAL. DUE	DATE	RECEIPTS	USED	UNIT BAL. ON HAND
1-2-54	201	12		1-4-54	219	2	9
2-8		12		2-5-54		2	7
				2-1	12	3	15
3-2	218	12		3-2		4	8
				5-11		2	6
6-8		12		6-8		3	3
				6-10	12	3	15
7-1	281	15		7-5		4	8
7-20		15		7-18		3	5
				8-2	15	5	15
				9-1		2	12
10-1-54		15		10-18		5	7

STOCK CONTROL RECORDS are carefully posted at Canco. Predetermined minimum and maximum quantities are key to avoiding excessive down-time resulting from time lost in shipment of needed replacements.



REPAIRING A COMMUTATOR in the plant's own electrical shop is example of way Eimco holds down replacement motor needs. Other on-the-job repairs are handled fast when breakdowns involve out-of-stock parts.

WESTERN PLANTS VS. THE SPARE PARTS PROBLEM—2

In-plant repairs are best answer

... at Eimco Corp. in Salt Lake City, one of the West's "supply problem" areas. Preventive care and rush-rush air deliveries help too.

SUPPLY facilities in Salt Lake City, Utah, another of the West's comparatively remote manufacturing areas, present a "tug-o'-war" situation to plant operators. Eimco Corp., manufacturers of tractors and power loading machines, states the situation as being "an important matter of holding down our inventory of replacement parts in our maintenance program while still being able to meet production line breakdowns rapidly and efficiently."

However, Eimco has been able to do just that by developing full utilization of four factors:

1. Close cooperation of manufacturers who send needed items by air express the same day the order is received. This is usually possible if the item is a current production item and not an obsolete model.

2. Holding locally stocked parts to a minimum as far as in-plant inventory goes.

3. Plant operating ingenuity which enables on-the-job repairs as an answer to breakdowns involving out-of-stock parts. (The plant has its own electrical shop where major motor breakdowns can be handled, thus min-

imizing replacement motor stocks.)

4. An increasing emphasis on the plant's preventive maintenance program.

Maintenance and production supplies, both equipment and tools, are handled by two separate departments and stockrooms. One is the electrical department; the other is the tool crib which stores all non-electrical parts and supplies.

The electrical department has its own shop which handles major repair jobs. This shop enables the firm to hold its stock of replacement motors down to about 14. Motor rewind facilities are such that a motor can be rewound in three days. It is then either returned to operation or to replacement stock.

If the shop had not been established, the plant would have to stock

AUTHOR OF THIS ARTICLE



LESLIE SEAGER

Acting Plant Engineer
Eimco Corp.
Salt Lake City, Utah

a large inventory of motors for each different operating drive. This is stated in view of the next-to-impossible status of motor standardization in the plant since production machines are purchased from a number of different manufacturers. However, due to production requirements, several machines of the same make and model are employed in production.

For example, two ZAC Warner and Swasey chucking machines are in the plant and three Bullard Multi-Automatic eight-spindle chucking machines are presently being installed. Motors and other parts for each of these machine groups will be almost 100% interchangeable.

Monthly summary of costs

Careful records are maintained in the electrical shop making possible a monthly summary of maintenance costs involved in this stop-gap to supply problems. During the first three months of 1956 costs tallied up as follows: January, 670½ man hours and \$866.10; February, 545 man hours and \$671.71; March, 493 man hours and \$599.08.

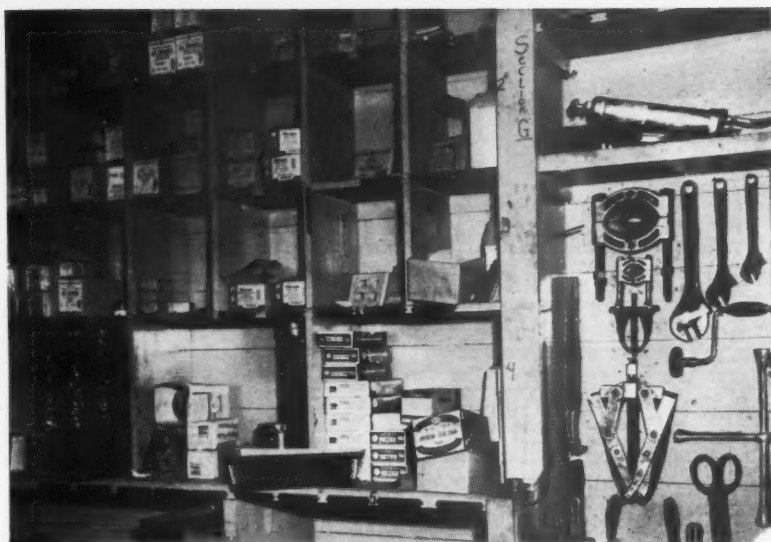
A two-card record system is used to maintain these records. An electrical maintenance record card is used to record data pertinent to repair jobs done on the floor of the plant. The second card in use is an electrical shop service record, which provides data pertinent to shop repair jobs. (See accompanying examples.)

Main stockroom for the electrical department is on the ground floor with an overflow which is accommodated in a near-by second floor storage room. Most of the supplies used only for maintenance are kept on the second floor. Material used both for maintenance and production purposes—such as wire and frequently used electrical items—is stored in the main stock room.

Perpetual inventory records

Kardex perpetual inventory records are kept in both the electrical department's stockroom and the tool crib. This stock control system covers equipment used in four adjacent plants: Eimco Corp., Eimco Filter Div., Structural Steel & Forge, and American Foundry & Machine Co. However, the majority of the parts are maintained at the Eimco plant with the stock control records and small stockrooms are maintained at each of the other plants for stocking frequently used parts.

Approximately 2,000 maintenance parts are stocked in the electrical department storeroom. A total dollar



JUST A SAMPLE of the extensive and varied stock of maintenance parts and tools needed at Eimco to make in-plant electrical repairs.

value of \$21,000 repair equipment is maintained in the entire plant.

On a number of recently installed machines electronic controls have been used and the quantity of electronic tubes maintained for replacement has been increasing constantly.

Relying upon local distributor stocks has helped the plant hold its inventory down. Such items as bearings, pillow blocks, belting, etc., are available locally and can be delivered to the plant the same day they are ordered, and often in a matter of a few hours if necessary.

An increased emphasis is being placed on preventive maintenance. An example is the task of filtering transformer oil in the oil circuit breaker on two electrical furnaces. This is done every second Saturday while the plant is not operating. Fuse lengths and other easily burned out items are frequently checked also.

Shop ingenuity, as is true in most Western plants, has often meant the saving of many dollars by avoiding down-time. Recently two cast iron fulcrum blocks on a milling fixture at Eimco were accidentally broken. To replace the fixture would have cost approximately \$1,200. The fixture was repaired in the tool room by milling the broken surfaces flat and repairing it with the use of dowel pins and studs. Such repair made the fixture sufficiently strong to withstand the normal operational stresses for the part and required only 16 man hours of work.

The main tool crib is centrally located in the manufacturing division of the plant. Here, all bins containing cutting tools and production



GOOD WELDING FACILITIES enable Eimco to make fast equipment repairs.

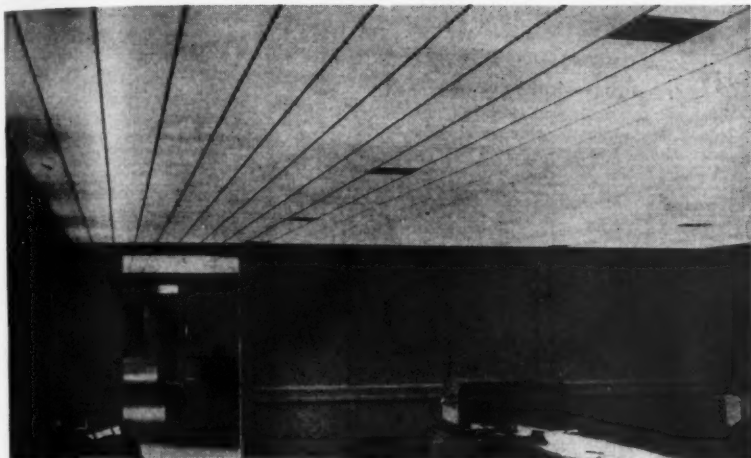
supplies, non-electrical maintenance items, and items most frequently called for on the ground floor of the crib are stocked. A smaller storeroom is located immediately above the tool crib for parts used infrequently, such as machine repair items.

Maintain Western facilities

Several manufacturers of the machinery used at Eimco maintain West Coast service facilities. Maintenance men going through the area from these service centers often make repairs and adjustments to the machines without charge to the plant. They are

Right light can slash costs

Don't believe it? Take a look at what it's doing for production, inspection, worker morale, and safety at two Western plants.



Indirect lighting, but direct savings

LIGHTING fixtures providing 175 foot-candle lamberts of brightness in the research and development department and 125 foot-candles in the assembly department at Berkeley Div. of Beckman Instruments, Inc., in Richmond, Calif., have resulted in a definite increase in production efficiencies and a reduction in inspection costs while the plant increased quality of its product.

Other values received from the improved lighting conditions are in worker morale factors and increased safety. The plant recently received a special award for completing over 750,000 hours of accident-free operation.

In the research and development department, a luminous ceiling has been installed to encompass almost 13,000 sq. ft. No supports are required.

Color scheme plays an important part in the effectiveness of any lighting scheme. Here the walls are brown and white and light tan movable Hauserman partitions are used. The floor is of light tan asphalt tile.

Costs involved when figuring the difference between a less effective lighting scheme and the present production helper were 50% additional to go from 50 foot-candles to 90 foot-candles and another 50% increase when the candle power was jumped from 100 to 175 foot-candles. These estimates were provided by illuminating engineers of the Pacific Gas & Electric Co. who worked closely with Beckman Instruments during the planning stages of the installation.

Behind the plastic ceiling are 419 fixtures containing 838 lamps 96 in. long, T-12, 430 milliamperes. The ceiling itself is comprised of over 2,000 Acoustic-Celotex plastic squares which diffuse the light.

Indirect lighting fixtures in the assembly area provide a maximum vision in all phases of the operation. The ceiling here has been painted a light blue to allow for a minimum of contrast between lighting fixtures and ceiling. This color also provides a maximum reflectability utilizing all of the light to fullest benefit.

Production up 16%; rejects down by 26%

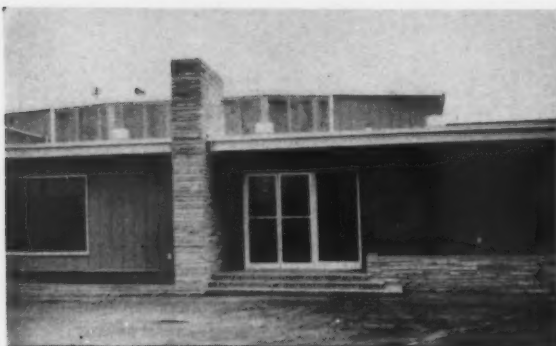
A NEW high output fluorescent lighting installation at Metwood Manufacturing Co. which delivers an average of 200 foot-candles of light throughout the plant has resulted in a 16% gain in machine productivity and a 26% decline in reworks and rejects. Metwood officials say that "initial and operating costs of the new lighting system, when compared to investment in machinery and operating



cost with payroll per unit produced, seemed small."

A General Electric system, the lighting scheme consists of 8-ft. slotted fluorescent fixtures mounted in continuous rows. Upward light is reflected

from the ceiling to help make seeing more comfortable. Morale among workers has improved and many have stated that they feel safer and no longer suffer from eyestrain due to shadow and reflected glare.



ATTRACTIVE AS YOU WANT IT...



OR PLAIN



SMALL PLANT...



OR AS LARGE AS YOU NEED IT

TODAY'S PREFAB STEEL BUILDINGS CAN PROVIDE YOU WITH A...

New low-cost plant within days

NEEED A NEW low-cost plant building within 30 days? 10 days? Then you'd better take a look at today's prefabricated steel buildings. The Western industrial landscape is already profusely dotted with these quickly erected structures, result of a booming increase in their use since 1950.

There are plenty of reasons for this phenomenon. Market demands for industrial and consumer products in the Western region are consistently outstripping the West's productive capacity. Hundreds of small firms, and many large ones, are rushing new facilities and hurriedly setting up production lines to meet and capitalize on these demands. These firms have built and are building prefab steel structures to get into production fast and economically.

Steel buildings have inherent advantages for Western firms that are hard to beat:

- They are mass produced for low cost, and are immediately available.
- They are standardized in design and engineering for low cost.
- They are fabricated for fast and low-cost field erection.
- They can be erected and ready for use within days.
- They are versatile in plan, can be adapted to any industrial need, and are easily expandable.
- With clear-span frames, they offer a maximum of usable floor and storage space.
- They require practically no maintenance over a long period.

Photos on these pages and technical consultation on the text were provided by Soule Steel Co. Our thanks also to other major steel building manufacturers who have made their latest literature available to WESTERN INDUSTRY readers (see box on opposite page).—Ed.

Here, for example, is how two Western firms have recently used steel buildings to solve pressing needs for obtaining production and warehousing space:

A Western aircraft firm was to be awarded an important military contract. The hitch—delivery of the first planes in just six months. The problem—how to increase production area by 53,000 sq. ft. fast, maintaining clear-span interiors to facilitate work on wide aircraft wingspreads. The best answer was determined by plant engineers as six rigid-frame steel buildings erected side by side in three separate twin bays. The plant was completed and ready for production in 60 days.

Another Western manufacturer had his petroleum product warehouse completely destroyed by fire. The warehouse was at a remote location, and a ship load of new merchandise was in transit. A new building was needed

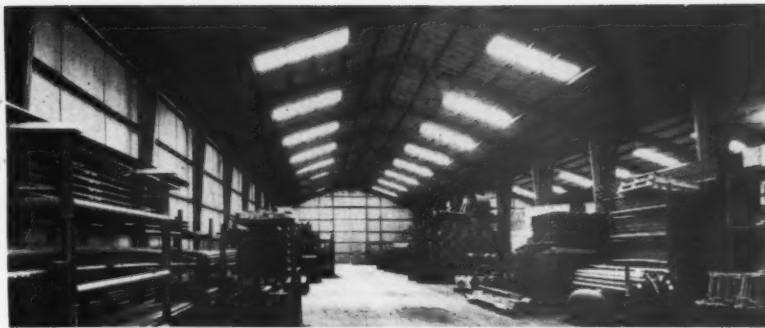
almost immediately to accommodate this new inventory, and maximum usable area was needed for storing palletized goods. A steel building was specified, and was erected in 10 days. When the shipment arrived, the warehouse was ready and dealers in the area were assured complete service just two weeks after the fire. The clear-span building has no interior support columns so handling and storage of pallets by fork lift are unhampered.

How do you buy one?

How do you go about buying a steel building? The steps are simple.

First, in selecting your site, be sure to check on local building code requirements. A few incorporated areas in the West do not allow construction of these prefab units, although the trend is toward greater leniency in view of the permanency and improved appearance of the buildings.

Then, contact one or two steel building manufacturers of your choice to obtain their consultation on the type building best fitting your needs, accessories you will want (varying door types, types of and placement of windows, special features such as ventilators, crane ways, plastic sheets for skylights, etc.), and to obtain price estimates. (Major firms providing recog-



CLEAR-SPAN RIGID FRAME construction provides maximum of usable floor and storage space, and is a factor in fast field erection too.

nized and reputable steel building service to the West today include Soule Steel Co., Empire Steel Buildings Co., Butler Manufacturing Co., Armco Drainage & Metal Products, Inc., and Stran-Steel Corp.)

The foundation for your new steel building could be a problem but it's not, simply because every leading steel building manufacturer will provide you with specifications and plans for the foundation to accommodate the building type you have selected. Foundations can be temporary or permanent. If you want a permanent concrete foundation, as an example, you will hire a general contractor to pour the slab according to the specs al-

ready provided to you. The contractor will also take care of your plumbing and electrical work.

Erection in almost every case will be done for you most economically and fastest by the erection crews of the steel building firm you have selected. Or any local contractor can do the job for you, following erection instructions provided by the manufacturer. Erection is simple. Frames go up first, then sheeting for roof and sides are placed and doors and windows are installed.

Final step, which your contractor will again handle, is to paint and glaze according to your instructions, and do any facade work that you desire. If you want to paint your building for added eye-appeal, extended durability, or to reduce summer temperatures with white or light exterior, usually one finish coat over a prime coat is enough. Again, manufacturers are ready to provide you with technical advice on both exterior and interior finishes. They'll also provide you with the details on using insulating materials, and various types of paneling for your building's interior—if you want to add these features.

Trend is to good looks

A strong trend in the West today is toward the use of attractive facades architecturally designed to conform with the owner's requirements and to satisfy the owner's aesthetic eye. Combinations of brick, mortar, and glass provide a facade transforming the steel building into a modern, individually styled structure.

Cost? For a standard structure, you can attain a cost of \$1.25 per sq. ft. Extra optional features will add to square footage cost, of course, but—feature for feature—it will be almost impossible for you to find a more quickly erected, practical and efficient plant structure than today's prefabricated steel buildings.

LATEST DATA BOOKS ON TODAY'S STEEL BUILDINGS

20-page guidebook from Soule Steel Co.

... describes how to adapt steel buildings to your individual needs. How to achieve maximum usable space and attain attractive variations in appearance are covered, along with features of the Soule line that contribute to fast erection, maximum storage and production space, expandability, and low cost. Complete information is given on extra features available at standard cost. Specifications are provided, with instructions on how to obtain price quotations quickly and easily. *Soule Steel Co.*

... for your copy circle No. 150

Two manuals cover the Butler line

Butler's 16-page manual No. 17-L gives full details on the firm's all metal buildings and on "Butler System Buildings" which are architecturally designed to conform to owner's specific requirements. Complete construction details are provided, along with discussion of different types. A 12-page manual is available telling you how to plan your warehouse using Butler pre-engineered warehouses. *Butler Manufacturing Co.*

... for your copy circle No. 151

26-page data book on Armco's structures

Armco steel buildings for all types of needs are detailed and illustrated in this

manual. Construction details are provided, and suggestions for choosing accessories are included. Many suggested applications are listed and illustrated. Information is provided on how to compare costs. *Armco Drainage & Metal Products, Inc.*

... for your copy circle No. 152

Photos and specs on Empire's units

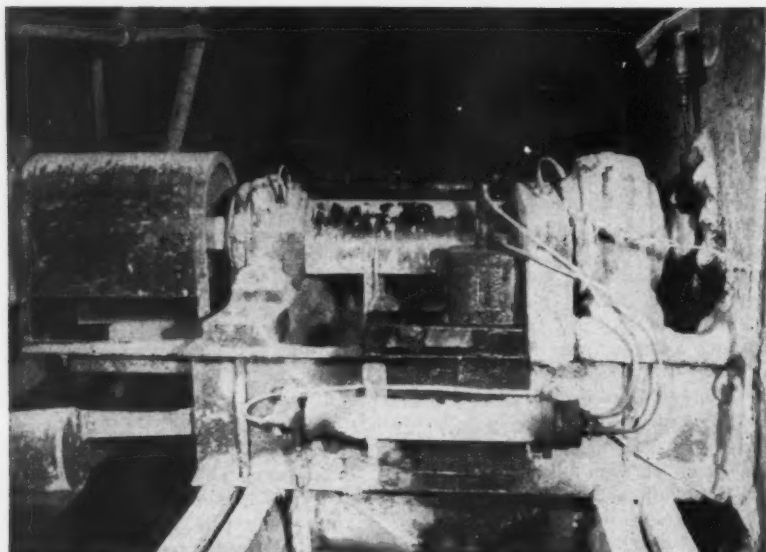
Many exterior and interior photos illustrate the many sizes and types of rigid frame, clear-span steel buildings of this Los Angeles firm. Complete information is provided on how Empire crews do the entire job of providing custom-designed buildings of both steel and concrete. Another available booklet contains complete standard specifications to provide the owner-to-be with an increased understanding of the construction, process and features of Empire units. *Empire Steel Buildings Co.*

... for your copy circle No. 153

Data sheets on the Stran-Steel line

Many applications are pictured and described, and construction details are provided in a six-page Stran-Steel bulletin. Both rigid frame module and bow-string module types are covered. Another four-page folder contains use suggestions and has a pop-up paper model of a complete rigid frame building. *Stran-Steel Corp.*

... for your copy circle No. 154



DIRT, DUST, all types of weather create tough lube problem on fan jackshaft bearings.

One grease does the job of five

SEVERAL severe lubrication problems are presented by the many bearings in use at Permanente Cement Co.'s Permanente, Calif., plant. Any lubricant used must be able to withstand excessive heat, water, dust, shock loads and meet the requirements of a wide range of operating speeds. The West's largest cement producer, the plant is a fully integrated operation producing one sack of cement per second on a 24-hr., seven-day week basis. Every conceivable bearing type and application can be found in the plant.

Five different greases have been used in the past to meet the requirements of this operation, but plant engineers at Permanente now have hit upon one grease that meets a majority of their requirements.

Here are some of the individual lubricant applications involved. Quarry operations involve high loads in dry dusty atmosphere. Earthmoving equipment, conveyor rolls, primary crushers, electric motors, and jackshaft bearings are subjected to extreme contamination from dirt and dust and

must operate in any type of weather condition.

In the crusher house, high pressure water is used to wash down the equipment and wet grinding operations involve abrasive-laden water contamination. High speed jaws, blowers, and separators in the kiln area present high temperature problems.

Added to the problem are the many methods of lubrication involved. Remote, hard-to-reach bearings are automatically lubricated. However, the majority of lubrication is done by hand pressure guns. Many electric motor bearings must be cleaned and repacked with lubricant by hand.

Greases previously used each matched specific operating requirements. One type was used for general purpose applications, another for high speed ball bearings, a third where mechanical applicators were employed, another for the plant's many "hot spots." Electricians at the plant had their own pet grease lubricant.

Calol industrial grease, a Standard Oil product, is now the principal

grease used at Permanente. Stability and adhesion that has been "designed" into Calol permits it to form a collar about any bearing and seal out dirt. This characteristic also causes the grease to maintain its consistency in antifriction bearings kept full of grease by automatic lubricators. The new grease is not water soluble and it contains rust preventives that protect machinery during shutdowns.

Bearings formerly operating at excessive temperatures have actually "cooled down" due to lubricating properties of the grease. Those running in high ambient temperature areas have shown no leakage. The grease withstands temperatures up to 500 deg. F.

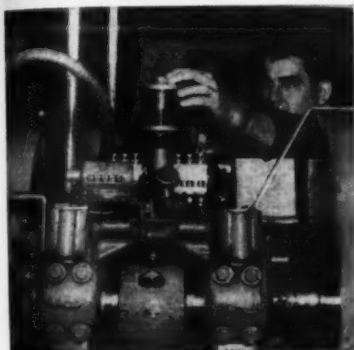
Enabling Standard Oil to obtain the many characteristics that have aided in Permanente's lubrication problem is a synthetic thickener termed by its developers, California Research Corp., as X-10. Fuel and lubricant scientists at California Research report that 30 months and 226 formulations went into the development of the new thickener.

Automatic oilers on presses and conveyor chains

PRECISION and effectiveness of the lubrication of 5 Federal presses used to produce lock dials at Schlage Lock Co. and a 160-ft. chain conveyor in the electrostatic spray machine at this San Francisco plant is being obtained through use of a centralized and automatic oiling system. Prior to installation of the automatic lubrication equipment, oiling was a matter of daily filling oil cups on the presses for which production was stopped. Oilers spent 4 hr. twice a week manually oiling the chain conveyor which also required a shut down of the equipment.

The Oil-Rite systems in use at Schlage Lock consisted of a reservoir from which oil is released by gravity.

Flow of the oil is controlled by an electric solenoid valve and single or multiple sight feed valves for individual flow to each bearing or surface. When the presses are turned on the solenoid releases controlled feed or lubricant and the flow is constant while the machinery is in use.



SOLENOID-CONTROLLED flow of oil on presses is finger-tip adjusted.

Oil from the reservoir on the chain conveyor system is fed to brushes which are located in contact with the chain. Schlage Lock has found that the automatic oiling system has reduced its normal consumption of oil because it is accurately controlled to a predetermined flow. Experience has also proven that the system is cleaner than manual oiling and that it definitely provides a more fool-proof preventative maintenance tool.

Mist lubricators stop plant fires, bearing failures

WHEN grease and sawdust mix, there's trouble in a saw mill. Bearings run hot, burn out, and often cause fires. But, the sawmill plant manager, in addition to the headaches of bearing replacement and fear of mill fires, faces a standard plant operators problem when faced with indefinite lubrication—the "edginess" and uncertainty.

Installation of a mist-type lubrication system at Rickini Lumber Co.'s Saginaw, Ore., mill has eliminated the "edginess" and costly replacements and downtime. Previously mill operators had to be on constant guard against lubrication breakdowns. Production was often stopped to climb into machinery to grease or oil hot bearings. Several cases have been encountered which caused the entire

mill to be down while replacement bearings were sent for and installed.

Three major pieces of equipment in the mill have been equipped with Alemite Oil-Mist automatic lubrication. They are a 17-ladder trimmer, with mechanical lift; a 52-in. edger, and a 6-ft. single cut band saw.

There are five Oil-Mist units on the trimmer, serving a variety of bearings and lubrication points, on hangers and saw arbors. Most of the bearings are $2\frac{3}{8}$ in., with the exception of $1\frac{3}{4}$ -in. roller bearings on the mandrels. The machine's $\frac{3}{4}$ -pitch, four-lane chains are also Oil-Mist lubricated.

Formerly, chain cases were filled with oil, while the plain bearings on the main shaft running through the case were lubricated with grease cups. Contamination by sawdust and grease, which made frequent clean-out sessions necessary, has been eliminated. The cases have been opened only for inspection in more than $1\frac{1}{2}$ yr.



20-LB. AIR PRESSURE operates five mist lubricators on this saw mill rig.

Each Oil-Mist unit requires 6 oz. of turbine oil per 8-hr. shift, and is operated under 20-lb. air pressure supplied by the mill air line. Lubricator reservoirs are filled at the end of each second shift, a total of 5 or 6 min. being required to fill all five.

Previous lubricating methods were the cause of an aggravating problem on the 52-in. edger. Two arbor bearings of the edger are $3\frac{3}{4}$ -in. anti-friction units, subject to both extreme load and frequent shock or impact during operation.

No matter how frequently the bearings were given a "shot" of grease, the lubrication did not protect these arbor bearings against running hot. The grease was squeezed and melted out, and the only remedy was a shut down for cooling. This situation has been eliminated by installation of the Oil-Mist lubricators and a once-every-second-shift filling of reservoirs is the only attention needed for the unit.



NO OVERHEATING of bearings on this edger since mist system was installed.

The pit bearing on a 6-ft. single cut band saw had been the "weak spot" on this unit, not because it was constantly splashed with a mixture of sawdust and water, but because it was necessary to climb down into the pit to lubricate it. Bearing life had never exceeded a year. Since application of the Oil-Mist system the pit bearing and all other bearings on the saw have operated without replacement.

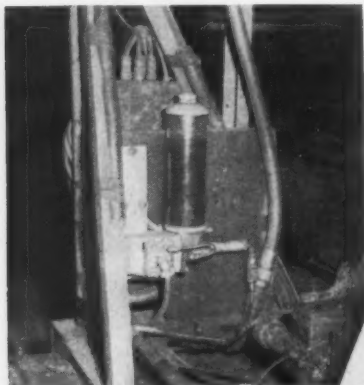
Centralized lube stops failures at three lumber mills

CENTRALIZED lubrication of machinery in its Northern California mills has eliminated many mechanical failures and production problems for Hammond Lumber Co. of Samoa, Calif. Here are the details of those problems as reported by Ray Jerlund, mechanical maintenance supervisor who worked with Gene Gonzales, lubrication specialist for Humboldt Supply Co. in Eureka, Calif., to engineer and install the problem-solving systems.

First problem to be solved by centralized lubrication was on trim saws at the redwood mill's Samoa plant. Air cylinders on the machines were often sticking due to salt air. Maintenance costs were high; down-time cut into production. So mill operators decided to try Lincoln Engineering's new automatic lube system consisting of time-clock control, air actuation, a Centromatic pump, pipe lines, and individual adjustable Centromatic measuring valves at each air cylinder.

The system was installed and adjusted to inject 25/10,000 oz. of oil into each cylinder every 3 min. Air

pressure of 2,000 psi. insured oil reaching piston rods against back pressure. The sticking problem was eliminated and systems were installed on two other trimmers.



THIS PUMP "powers" oil to each of 24 bearings on Big Lagoon log carriage, reducing accident hazards and providing controlled lubrication.

The second problem to be licked was at the company's Big Lagoon salvage mill where all lubrication was being accomplished by hand methods at lunch time or after shut-down. This time a Lincoln CentrOMatic manually triggered grease system was chosen for the job. Dispensing from refinery package and piped through 1-in. steel tubing, the system was designed to cover the entire mill, with the exception of a log carriage unit.

Particularly outstanding aid and results were obtained from lines installed to 24 hard-to-reach bearings on top of the trim saw. Results were: reduced accident hazard, better lubrication through controlled application every 2 hr., prevention of contamination, and reduction in manpower required.

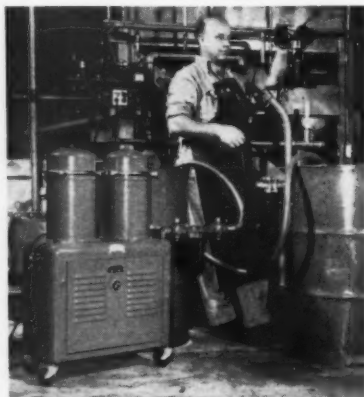
The one point not covered at the salvage mill, a Mater log carriage, was a situation for a separate automatic oil system timed by air impulse from machine controls. The system installed services 24 bearings and slides with an average lube cycle of every 3 min. Evidence to date indicates a longer bearing life, less down-time, extended slide life, and another saving in manpower.

Still another centralized lubrication set-up was installed in a "hot spot" at the Eureka mill. Here, a saw trimmer was equipped with a time clock controlled CentrOMatic system which serves 168 bearings. Lubricant is dispensed direct from 1/4 drums, with timing and flow of lube regulated to prevent drippage and possible spoilage of top grade lumber being processed.

Reconditioning unit purifies lube and hydraulic oil

COST of a portable oil reconditioning unit installed at Aluminum Extrusion Co., Los Angeles extruders of aluminum building products, was a simple matter of a 60-day investment with never-ending returns. This plant is under a constant and heavy-demand production situation at all times and down-time on machinery runs high.

To help prevent bearing and pump failures, a Mayhew reconditioning unit is being used to purify lubricating and hydraulic oils. A portable model, it receives the oils via a suction hose to a self-priming rotary-gear type pump, goes through the filtering process, and is returned to operation. Types of contaminants being removed from the oils are dirt, metal particles, moisture, acids, and lint.



RECONDITIONER removes dirt, metal particles, moisture, etc. from oils.

In addition to preventing breakdowns and saving labor, the reconditioner has enabled a drastic cut in oil consumption at the plant. Savings accumulated during the first two months use of the unit offset its initial cost.

All-purpose grease saves dollars in equipment care

MANY Western lumbermill operators have been faced with the problem of a reduction in "free" tim-

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Increases Tool Life over
200% for Welsbach
Why not try it yourself?

In the manufacture of valves the Kitson Division of The Welsbach Corporation, Philadelphia, Pa., has to deep-drill brass rod. Originally the rod was free-machining brass. However, when Revere discovered the extent of the drilling it was suggested that our Mixture 252, Deep-Drilling Brass, would be preferable. This was tried, and the machine shop foreman reported that tool life was increased over 200%. In one item it is possible to bore with a single operation, against the former practice of withdrawing the drill three times in order to clear the chips. Revere's Deep-Drilling brass produces very small, easily cleared chips.

Another item is a high pressure gas valve, with a cast body and brass rod stem. The rod was changed to arsenical bronze, which costs a bit more, but it ended flaking and galling between stem and seat, and materially reduced rejects. Still another instance of Revere service concerns a hot water heater relief valve. The original model was cut out of bar stock. We suggested a high leaded brass tube, hexagon outside, round inside. This greatly reduces machining, has a better surface, and a better seat. Costs more by the pound, but saves more by the piece.

Revere salesmen and Technical Advisors are always glad to collaborate in seeking ways to save money and improve products. Perhaps we can help you!

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COPPER AND BRASS INCORPORATED

Founded by Paul Revere in 1801

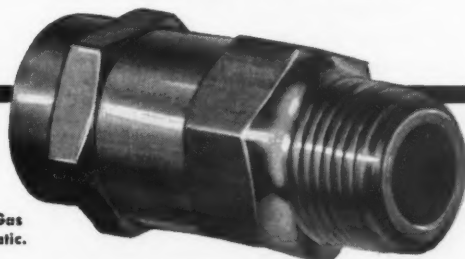
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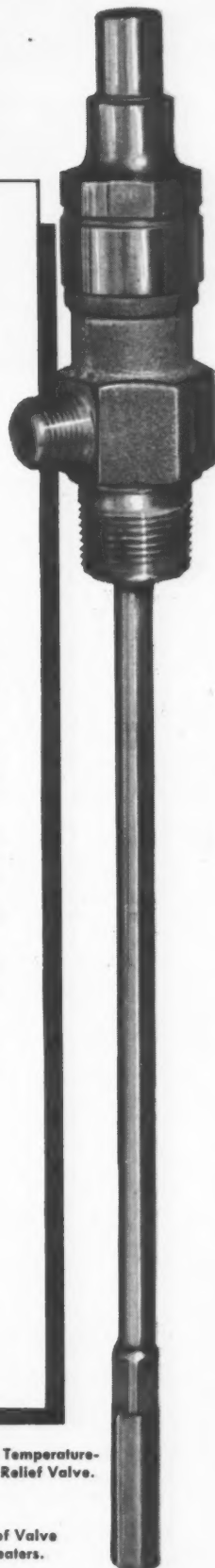
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Pressure Relief Valve
for water heaters.



GEARS FOR INDUSTRY
THE **Lufkin LINE**
OIL FIELD PUMPING UNITS

Eiffel Tower No. 1

Some people have a way of running a good thing into the ground and, of course, that's all right, too, I guess, if it happens to be one of Tom Ashe's Globe Oil Tool rock bits because we hear they're awful good to run into the ground with.



V. J. Fawcett

We mean, please excuse this one additional reference to a trip through Europe, and do hereby solemnly pledge not to brag about it any more.

While in Paris, a few post cards were sent home and one to a very good friend and customer by the name of Jeff Raffi, Purchasing Supervisor at Union Oil's head office in Los Angeles. Somehow, a post card of the Eiffel Tower reminded me of a King Size Oil Field Derrick and a remark to Jeff that it was definitely not of the portable variety. Such similarity could only occur to an Oil Field Pumping Unit peddler. However, I could see no pumping unit, so naturally assumed this to be a flowing well.

Jeff Raffi, however, carried this fantasy a step farther, and upon returning to Los Angeles handed me back the post card and right under the derrick, Jeff had neatly pasted in a picture cut-out of a pumping unit.

Now this is what worries me, after all the good things I've told Jeff about Lufkin Pumping Units, he inadvertently used an illustration of a Nacirema (like Serutan) Pumpkin Unit!

So, as anyone can see, since the last time I saw Paris, there's a lot of work to be done.

V. J. Fawcett

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ber—obtained in exchange for clearing farmer's land—and consequently finding themselves in an economical problem-spot. It called for a close scrutiny of mill operations to reduce operating costs in any manner.

Hulbert & Muffy's Cloverdale, Calif., mill operators found that one big area for possible cost reduction lay in the field of equipment lubrication. Not only were lube operating costs reduced, but more effective lubrication procedures were established, thus maintaining equipment in a better condition and further reducing costs. Down-time in the mill is estimated to cause a loss of 100,000 board ft. of lumber per day.

Most effective step taken in changing lubrication policy was the use of a multi-purpose grease. Chosen for the job of greasing hundreds of bearings on sawmill equipment, fork lift trucks,

a crawler tractor, and lumber trucks was Shell Alvania Grease 2. The mill lists the following as advantages leading to cost reduction obtained:

1. Using the multi-purpose grease takes less time and less lubricating equipment. Instead of switching back and forth between a sodium-base grease and a calcium-base grease, for example, the lube man uses one grease gun and one grease for all of his work.

2. Inventory and storage problems are minimized. Reduction in space required to store an assortment of bulky grease drums was noticeable.

3. Actual cost of material used has been cut because the mill buys the one grease in large quantities, rather than several greases in smaller quantities.

4. The possibility of supplying the wrong type of grease in any location has been eliminated. Training of new lube men is simplified.

22 LUBE MANUALS—best literature available today, and they're free. Use Reader Service Postcard, pg. 111.

48 pages detailing complete Alemite line

Alemite's general industrial catalog is a complete showing of all Alemite lubrication equipment for handling industrial lubricants from barrel to bearing. Page 2 consists of a selection guide which suggests various methods of handling lubricants. Included are both hand and power operated equipment, stationary and portable, and a variety of specialized accessories with full specification, operating, and application data on each. *Alemite Div., Stewart-Warner Corp.* . . . for your copy circle No. 155

16-page Lubriplate product and application data manual

"Proper lubrication . . . the life blood of all machinery," is the cover statement of this Lubriplate Data book, and the data inside is designed to show you where the many products of this firm can be used in industrial plants. Specifications are given for each product, including pour points, flash points, fire temperatures, and viscosities at 100 deg. F. Six pages of the manual are devoted to recommended lubricants for various operations in 28 different types of machinery. Last three pages are directory data listing local purchase points for the products. (Booklet 55-1) *Fiske Brothers Refining Co.* . . . for your copy circle No. 156

36 pages cover full Union Oil line

Each of the Union Oil lubricating greases and oils are treated in this manual. Characteristics under specific operations are detailed and operations for which each grease or oil is recommended are listed. Also covered is information on techniques of application and the final pages of the manual are devoted to location information on company offices and distributors. *Union Oil Co. of California.* . . . for your copy circle No. 157

40-page manual on full Oil-Rite line

Each piece of lubricating equipment in the Oil-Rite line of centralized and controlled devices is covered separately in this 40-page compilation of data. Some of the equipment covered includes complete oiling systems available in manual and automatic electro models with case history data outlining in-plant experiences with the system, miscellaneous and special systems which have been built and are available with Oil-Rite components, chain oilers, and vibrating rod oilers—versatile and automatic machine oilers. *Oil-Rite Corp.* . . . for your copy circle No. 158

Ucon 52-page manual on synthetic lubes

Properties, applications, and characteristics of polyalkylene-glycol derivatives used as fluids and lubricants are covered in this manual. Ucon fluids and lubricants have a multitude of established uses as mechanical lubricants, hydraulic fluids, rubber and textile lubricants, heat-transfer fluids, anti-foam agents, solvents, and formulation components. Supplied both in water-soluble and water-insoluble series and with or without additives, their viscosities range from 50 to between 60,000 and 90,000 Saybolt Universal Seconds at 100 deg. F. (Manual 6500D) *Carbide & Carbon Chemicals Co.* . . . for your copy circle No. 159

How to plan and use centralized lubrication

Designed specifically to help the plant operator plan and use Lincoln Centro-Matic equipment, this 30-page manual gives a start-to-finish instruction brief on the system with sections devoted to injectors, lubricant, supply lines, pumping units, trouble shooting, air operated pumps, electric pumps, and manual pumps. *Lincoln Engineering Co.* . . . for your copy circle No. 160

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ON THE WEST COAST, 5959 South Alameda, Los Angeles

Where you should use solid film lubricants

The particulars on make-up and application of Electrofilm, a solid film lubricant which is bonded to surfaces for lifetime lubrication of moving parts, is covered in this four-page bulletin. Details on how the process is applied—it can be done in the plant or in job shops located throughout the country—and how it works are also given. *Electrofilm, Inc.*

... for your copy circle No. 161

Complete Graco industrial lubrication line covered

Specification and selection data for each item in the Gray Co.'s line of industrial lubrication equipment is covered in this 32-page catalog. The line includes grease

fittings, hand guns, pail pumps and gun loaders, bucket pumps, bearing packers, lube carts, portable lubricators, transfer pumps, supply pumps, reels and outlets and hose reel components, coupled hoses and fittings, and many lubrication accessories. A special section in the catalog treats automatic lubricators for machine bearings. Full application and operating data are listed. (Catalog 402) *Gray Co., Inc.*

... for your copy circle No. 162

Multi-purpose Calol grease specified

Compounded with a completely different synthetic thickener, Standard Oil's new Calol industrial grease is described and its uses listed in this bulletin. Some of its features: it mixes with all other greases, has a

high melting point of 500 deg. F., is rust preventive, water resistant, non-corrosive, and pumpable over wide temperature ranges. Short case history data is also presented describing some typical applications. *Standard Oil Co. of California.*

... for your copy circle No. 163

20 pages on Farval's centralized lube system

Advantages of Farval centralized systems of lubrication on all types of industrial machinery are discussed in this bulletin. Complete information on the operation of Dualine measuring valves, photographs of system components and typical application views are included. One page is devoted entirely to the Farval lubrication survey which can be accomplished by obtaining bearing information and submitting it for estimation of lubrication system requirements. (Bulletin 26-R) *Farval Corp.*

... for your copy circle No. 164

16 pages on Tidewater industrial lube products

Each industrial member of the Tidewater Associated Oil Co.'s Tycol oils and greases is explained briefly in this booklet. Product applications include mill, shafting and journal oils, steam cylinder oils, turbine oils, dynamo oils, circulating oils, hydraulic hoist oils, air compressor oils, industrial greases, and many others. Make-up of each is detailed and application data given. *Tidewater Associated Oil Co.*

... for your copy circle No. 165

Molub-Alloy applications and specifications

A metallic solid lubricant, Imperial Oil and Grease's Molub-Alloy, is used to "plate" metal surfaces to absorb wear taking place on pressure areas. The oil or grease-form product is thoroughly explained and specified in this bulletin. Product breakdown in the bulletin is as follows: Molub-Alloy oils and gear oils, greases, outside gear greases, and spindle oils. Description and application data on each product is followed by data on viscosity and a handy SAE-AGMA comparison chart. *Imperial Oil and Grease Co.*

... for your copy circle No. 166

7 data sheets on Dow Corning Silicone lubricant products

Silicone Notes, covering preliminary and technical data on pneumatic greases, silicone greases, how to use silicone grease in electric motor bearings, oil-lithium soap type grease, valve seal, and valve lubricant compound, gives the properties of the Dow Corning products, performance charts, re-lubrication schedules, inorganic chemical service tables, and extensive application information. *Dow Corning Corp.*

... for your copy circle No. 167

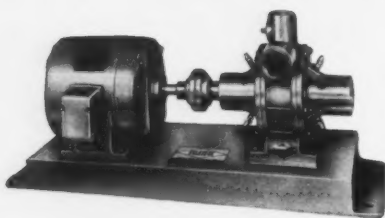
40-page catalog on Lincoln industrial line

"Industrial Lubricant Application Equipment for Productive Maintenance" covers in detail grease fittings, drum pumps, grease guns, measuring valves, bucket pumps, hose reels, filler pumps, material pumps, transfer pumps, and accessories of the Lincoln line in 40 well-illustrated pages. The catalog is broken down into easy-to-find sections which are listed on page 4 in a product selector guide. Each section contains construction, specification, and application data on a member of the line. Performance charts are included also. (Catalog 64) *Lincoln Engineering Co.*

... for your copy circle No. 168

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Hi-pressure—Hi-temperature STEAM SAVING Closed Condensate Return SYSTEM

Maintain maximum and uniform heat throughout processing equipment by removing condensate immediately after it condenses and at the temperature it forms. This system requires less piping, prevents steam flash and eliminates steam traps.

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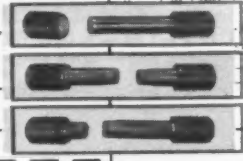
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EXAMPLES FROM TEST REPORT...

- PART NO. 2 fractured at 28,000 load pounds. Designed for .001 press fit tolerance and brazed in our dry-hydrogen furnace.
- PART NO. 4 fractured at 26,100 load pounds. Designed for .003 press fit and brazed by Exothermic method.
- PART NO. 12 fractured at 26,000 load pounds. Designed for .003 clearance tolerance and brazed by Exothermic method.



METAL CONTROL LABORATORIES
2730 EAST FLAVIN AVENUE
HUNTINGTON PARK, CALIF.
LUDWIG & BERRY
CERTIFIED REPORT OF PHYSICAL TEST

For Account of: FABRIFORM METAL PRODUCTS Date: 2-12-56
Your P. O. No.: 1008 File No.:
Manufactured at: Method No.:
Prime Contractor: Material: 4140 Steel
Subcontractor: Designation:

TEST NO.	PART NO.	TEST TYPE	TEST RESULT	TENSILE STRENGTH		YIELD STRENGTH		ELONGATION		REMARKS
				AS TESTED	MIN. REQ.	AS TESTED	MIN. REQ.	% IN 2 IN.	% IN 4 IN.	
1	.502	1871	27100	14537	0.06	2.0	0.0	0.0	26-1714	
2	.502	1871	18000	14537	0.10	3.0	0.0	0.0	26-1714	
3	.600	1908	27800	14537	0.08	2.0	0.0	0.0	26-1714	
4	.502	1871	26100	14537	0.07	12.3	0.0	0.0	26-1714	
5	.502	1871	26100	14537	0.07	12.3	0.0	0.0	26-1714	
6	.502	1871	26100	14537	0.07	12.3	0.0	0.0	26-1714	
7	.500	1862	25400	14537	0.07	1.5	0.0	0.0	26-1714	
8	.500	1862	25400	14537	0.07	1.5	0.0	0.0	26-1714	
9	.500	1862	25400	14537	0.07	1.5	0.0	0.0	26-1714	
10	.600	1862	25400	14537	0.07	1.5	0.0	0.0	26-1714	
			26100	14537	0.13	6.5	0.0	10.9	26-1714	
			26100	14537	0.18	7.0	0.0	17.2	26-1714	

ALL RESULTS ARE BASED UPON THE ASSUMPTION THAT THE TESTED PARTS WERE AS SPECIFIED BY THE FABRIFORM METAL PRODUCTS COMPANY. THE RESULTS ARE NOT VALID FOR ANY OTHER MATERIALS OR CONDITIONS.

Signature: [Handwritten Signature]

FABRIFORM METAL PRODUCTS Division of George Getz Corporation
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Address _____
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20-page lubrication chart for gas, diesel engines

The Texaco products recommended for lubrication of engines fueled by gas, dual fuel, and diesel oil are listed in this book-form chart. Engines are broken down by type of application and manufacturer. First page lists Texaco straight mineral oils and additive oils. *The Texas Co.*

... for your copy circle No. 169

32-page lubricants application guide

Keystone products and their individual application for lubrication of power generation and transmission and material handling equipment is covered in a two-page chart that heads-up this informative manual. There follows a run-down giving the prop-

erties and technical information pertaining to each of the products. Another two-page chart is devoted to specialized information on the selection of bearing lubricants and "where-to-buy" data is listed. *Keystone Lubricating Co.*

... for your copy circle No. 170

Pneumatic tool lubricator discussed

Operating principles, application data, specifications, and general information for the Arnold oiled air lubricator for pneumatic tools are given in this two-page bulletin. Lightweight and streamlined, the lubricator may be installed anywhere in air lines and is available in four sizes ranging from 1/6 to 1 pt. in capacity. *Rucker Co.*

... for your copy circle No. 171

Application data on forced feed lubricators

Adaptable to a variety of applications, the Manzel Model 25 forced feed lubricator is detailed in this 12-page booklet. Its construction features are highlighted in the first section of the booklet while details on how it functions and typical applications are covered in three well-illustrated pages. Specification and "how to order" data complete the manual. Drives available on the units are electric motor, standard end ratchet and rotary, special rear ratchet and rotary, gas or air. *Manzel Div., Houdaille Industries, Inc.*

... for your copy circle No. 172

Folder of oil and solvent reconditioner data

Information and operating bulletins are both included in this folder which describes the Mayhew portable oil and solvent reconditioning units. Used for the removal of contaminants such as solids of all natures, suspended solids from oil deterioration due to heat and oxidation, gums, varnishes, acids, water and emulsions from industrial oil and solvent products. Information bulletin outlines models available and specification data. Operating bulletin gives a good outline of how the equipment works and application information. Standard models are pictured. *Mayhew Products Co.*

... for your copy circle No. 173

Five plans for better plant lubrication

A basic guide to help plant men plan the correct combinations of lubrication equipment, Alemite's booklet shows common mistakes in handling of lubricants and how to correct them. The five planned combinations of equipment for transferring, loading, and applying lubricants can be adapted for almost any size plant and the manual is written in very broad terms aimed at the average plant operator. (Form 22-240-A-5) *Alemite Div., Stewart-Warner Corp.*

... for your copy circle No. 174

Brochure on regulators, filters, and lubricators

This data folder includes four catalogs covering the Hannifin Crown line of air regulator, filter, and lubrication equipment. Bulletin 303 gives full data and specifications on air line lubricators for constant lubrication of air cylinders, air tools, and other air operated equipment. Bulletin 302 details in the same manner a line of air line filters with a double-action—cyclonic separation and micronic filtration—air cleaning system. The full line of air pressure regulators with a new internal valve arrangement is covered in Bulletin 301 and "Combo" units—mounted sets of filter, regulator, and lubricator units—are covered in Bulletin 300. "How-it-works" and application data for each are also given. *Hannifin Corp.*

... for your copy circle No. 175

Data on moly disulphide products, lubricants

The full line of Jet-Lube products is covered in this eight-page bulletin. Included is technical application and specification data on multi-purpose greases, outside gear lubricants, track roller lubricants, "MX" gear oils with moly disulphide, chain and gear oil, anti-seize compound, sealing compound, and Moly-Spray Air-Dry lubricant. Application directions, outstanding features, specifications, temperature, and corrosion resistance characteristics are included. *Jet-Lube, Inc.*

... for your copy circle No. 176



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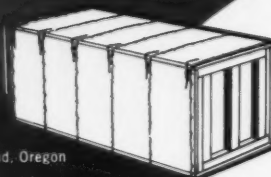
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vents foreign matter from entering
motor.

- Quiet operation obtained by careful
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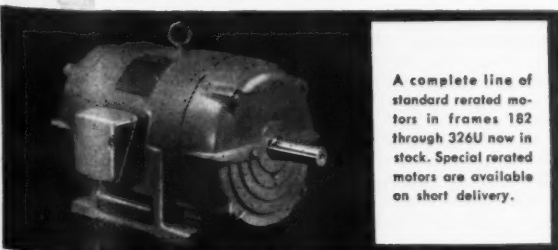
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45 MANUALS ON PAINTS & PROTECTIVE COATINGS

—yours for the asking

Here are today's best manuals on protective finishes for plant maintenance.
Obtain your selection by circling item numbers on rip-out postcard, page 111.

REVIEWED BELOW are 42 of the latest and most informative manufacturer manuals containing data that every maintenance-minded plant operating executive needs on just one important product group—paints and protective coatings. The manuals, se-

lected to provide the best up-to-date technology in the coatings field, were gathered during the past three months by the editors of **WESTERN INDUSTRY** as a special service to readers.

You are invited to check the listings and quickly determine which of

these best available manuals will prove to be the most useful selection and application problem-solvers in your plant. Circle appropriate key numbers on the **WESTERN INDUSTRY** Reader Service Postcard (page 111), to obtain your complete selection promptly.

Handbook on color dynamics for industry

The use of energy in color to promote industry efficiency is the subject of this 24-page book on color dynamics, a system of maintenance painting. A thorough explanation of color is given and its relationship to light and energy. The benefits of the use of color in industry are pictured throughout the book, which concludes with a safety color code. Information sheets are also available on Pittsburgh's floor enamel and cementide rubberized paint. *Pittsburgh Plate Glass Co.*

... for your copy circle No. 177

Data on protective finishes for plant maintenance

Chemical resistant finishes, general protective coatings, aluminum finishes, primers, and undercoats are all detailed in this 16-page catalog. Information given for paints includes chemical resistance, surface on which it should be used, method of application, drying time, spreading capacity, and colors available. Sample color chips are included. Also available are a series of technical bulletins on Alkalith, fast-dri primer, Myratec industrial finishes, undercoat, and red lead, metal and red lead primer, oxide primers, Fullerite enamels, Florcote, and Gilacoat. *W. P. Fuller & Co.*

... for your copy circle No. 178

Four booklets on paints for roof protection

A four-page booklet on the Fibertex glass roof system for resurfacing and repairing weathered asphalt roofs gives specifications, and application details and pictures. Application information for rough and smooth surface roofing are given in a two-page leaflet on emulsion roof coating. Carey's Enamelclad system for renewing metal, slate, and tile roofs is explained in a third booklet with many pictures showing how to apply the coating. Noah's pitch and flashing cement for stopping leaks and fixing cracks in chimneys, troughs, flashings, skylights, and roofs is detailed in a four-page booklet which also has application pictures. *Philip Carey Manufacturing Co.*

... for your copy circle No. 179

176 pages of paint specification bulletins

Complete information on use, resistance, color, and applications for Arco's complete line of paints and protective coatings is included in this 176-page book of specification bulletins. General categories include metal protective products, masonry finishes, caulking materials, roofing materials, aluminum paints, enamels, floor coatings, and varnishes. *Arco Co.*

... for your copy circle No. 180

Guide book for maintenance finishes

This 28-page book opens with a paint selector chart for both interior and exterior surfaces, giving the type of surface, material to be painted, type of coating, and recommended product. Four pages are devoted to color chips in different finishes. Specifications are included, as are instructions for surface preparations and suggested uses. Each paint is thoroughly described. (Booklet F-387) *Glidden Co.*

... for your copy circle No. 181

Instructions on how to strip paint

Complete information on methods and materials for paint stripping of all types of organic finishes is given in this 14-page book, which covers such subjects as stripping large areas of structural metal, ways to strip parts too large to be soaked in tanks, and what strippers to use for different paints—strippers for synthetic enamels, alkali-resistant plastics, wrinkle finishes, etc., are discussed. *Oakite Products, Inc.*

... for your copy circle No. 182

102 color samples of coatings, finishes

This 28-page 1956 catalog includes 102 color chips showing the different colors available in primers, coatings, finishes, and floor and deck coverings. A discussion of rust prevention through the use of these coatings is included, along with directions for their use and illustrations of applications. A question and answer section on the coatings completes the book. *Rust-Oleum Corp.*

... for your copy circle No. 183

Data sheet on tank protection system

Complete instructions for surface preparation for painted and unpainted tanks, priming for painted and unpainted surfaces, and applying finish coats are given in this four-page technical data sheet on primers and coatings for tanks. Characteristics of two primers and four different coatings are explained. The final section is devoted to trim coats for tank roofs, stairways and catwalks, and other uses. (Bulletin 5310) *General Paint Corp.*

... for your copy circle No. 184

Information on one-coat rust protective

The advantages of Rust-Tox, a one-coat rust preventive, are listed in this four-page booklet which explains how the paint provides a rust-resistant surface. Economic advantages of coating are included and applications pictured. *Skybryte Co.*

... for your copy circle No. 185

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Short course in paint technology

"Principal Types of Protective Coatings" is a 32-page book designed as a short course in practical paint technology to assist consulting and maintenance engineers in selecting the most suitable coating for a particular job. It gives definitions of different coatings, discusses their thickness, variations in resistance of pigments, cathodic protection, surface preparation of steel and concrete for the coatings and general pretreatment. A glossary of technical terms is included at the back of the book. (Folder 754) Also included is a four-page leaflet on chemical-resistant enamels with their specifications and applications. (Folder 571-S) *Inertol Co., Inc.* . . . for your copy circle No. 186

25 pages on corrosion-control materials

Nine coatings for corrosion control are listed in this booklet with instructions for their use and application through several different processes. "Colormation," a process for color coordination and visual identification for tools and machinery, is thoroughly explained and color chips of top coats included. Well illustrated. *Rocket Chemical Co., Inc.* . . . for your copy circle No. 187

Spec sheet on new epoxy resin-type floor coating

The questions "What is Duraflor?" and "What does it do?" are answered in this one-page specification sheet, which lists the acids, alkalis, solvents, oils, and salt solutions that Duraflor will resist. Directions and techniques for application are included, as well as a few of the limitations of this new epoxy resin-type protective floor coating. *A. C. Horn Co., Inc.* . . . for your copy circle No. 188

Three brochures on Ospho rust converter

Ospho is a phosphate-chromate primer which when applied to rust converts it to iron phosphate and leaves a dark gray surface over which paint can be applied. It is thoroughly explained in three brochures. One gives a general description of Ospho, a second pictures a three-step test showing how the coating works, while the third pictures several applications. *Rusticide Products Co.* . . . for your copy circle No. 189

Color chip guide for plastic paint

A small brochure on vinyl plastic paints which are unaffected by vapors and moisture has 18 chips showing the available colors and a short description of the paint. Permanent trim colors, exterior varnishes, and redwood oils and stains are all briefed. *National Paint & Varnish Co.* . . . for your copy circle No. 190

Technical data on aluminum conversion coating

This technical data sheet opens with a discussion of the purpose of this aluminum conversion coating and continues to give instructions on how to use it, including precleaning, deoxidizing, processing, rinsing, and drying. Also included are two bulletins on spray washer operation. *Turco Products, Inc.* . . . for your copy circle No. 191

Data sheet on synthetic rubber coatings

Ten characteristics of Duro-Prene seamless synthetic rubber coatings are listed on this data sheet, along with mixing and application data and suggested uses for the coatings. Five applications are pictured. *Electro-Chemical Engineering & Manufacturing Co.* . . . for your copy circle No. 192

Data on non-leaching aluminum pastes

A four-page booklet details two types of non-leaching aluminum paste—standard lining grade and fine lining grade. Advantages and applications of both are discussed and a property chart is included. Pictures illustrate usage. (Booklet MDC 2416) *Metals Disintegrating Co., Inc.* . . . for your copy circle No. 193

How to apply zinc phosphate coatings

This 10-page booklet describes the way to apply zinc phosphate coatings to steel in preparation for painting, explaining the nature and paint gripping properties of the phosphatizing process, and the way in which the process protects against rust after painting. Well illustrated with drawings and photographs. *Oakite Products, Inc.* . . . for your copy circle No. 194

How to use polyester gel coats

This data sheet on gel coats made from rigid and flexible polyester resins tells how to mix them, how to apply them, and gives a brief run-down of their major properties. Colors available are listed and uses suggested. *Rinshed-Mason Co.* . . . for your copy circle No. 195

List of eight paints for corrosion control

A 12-page booklet lists and discusses eight different paints that can be used for coatings to protect metal and concrete against corrosion. General characteristics, properties, and application data are given for each paint and the results of a 90-day test with the coating on steel are pictured and explained. Among the paints listed are those for use in severe corrosive conditions, corrosive fumes and weather, high temperatures, and with water-supply equipment and air conditioning installations. (Bulletin T97-33) *Koppers Co., Inc.* . . . for your copy circle No. 196

Data sheet on new multiple paste pigments

Much information on new metallic and non-metallic multiple paste pigments is contained in this data sheet. The paste pigments, called CPC, are non-oxidizing, non-corrosive, non-hydrolyzing in the presence of water, acids, or alkalies, non-discoloring, and non-volatile. Advantages of paints, varnishes, and enamels made from CPC pigments are detailed and a list of the materials with which the CPC pigments are compatible is included. The wetting agent incorporated in the pigments is described, as are characteristics of the resulting metallic surface skin. *Chemical Sealers, Inc.* . . . for your copy circle No. 197

Book of charts on Neoprene coatings

Information about the application of Neoprene liquid coatings to heat and air curing systems, process equipment, structures, and products is contained in a series of tables in this eight-page booklet. Considered are surfaces of metal, wood, concrete, fabric and rubber, ceramics, glass, and tile. A partial table of corrosion resistance is included as well as a discussion of the properties of the coating itself. *Chem-Life, Inc.* . . . for your copy circle No. 198

Two leaflets on anti-corrosive coatings

Dimetecote, an inorganic zinc coating for iron and steel structures, is detailed in a leaflet which gives general physical and chemical properties and includes a guide for ordering. A corrosion-resistance table lists industrial uses for the coating. A second coating, Amercoat, designed to resist splash, spray, and spillage of corrosive acids and alkalis, is treated in a second leaflet, which also gives general, physical, and chemical properties and ordering data. *Amercoat Corp.* . . . for your copy circle No. 199

Rust check-chart for a typical plant

This chart shows the layout of a typical plant with all the rust-vulnerable locations numbered and identified. A list of rust preventives is included from which selections are made to solve rust problems at the various plant points. A short description of the No-ox-id rust preventives is given. (Bulletin 3081-A) *Dearborn Chemical Co.* . . . for your copy circle No. 200

Technical bulletin on masonry block primer

Masonry block paint primer is explained in this four-page bulletin along with techniques involved in its application. Coverage and drying time are discussed, and a picture is included which shows the difference in a piece of masonry block when it is painted with block primer and when conventional cement and stucco paint are used. (Bulletin 14) *E. I. du Pont de Nemours & Co.* . . . for your copy circle No. 201

Booklet of portland cement paint chips

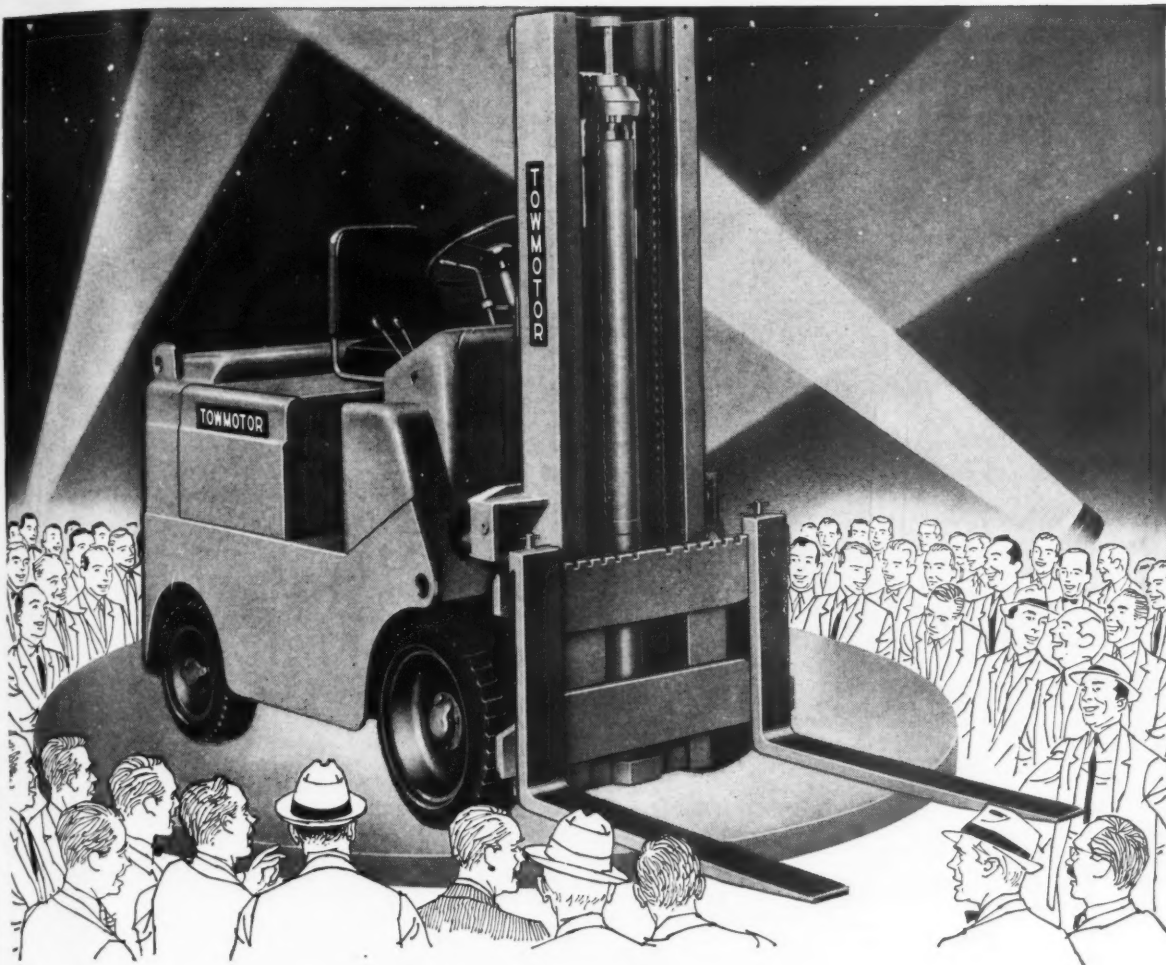
This booklet has 18 color chips showing finishes and colors of portland cement paint for use on galvanized iron, aluminum, stucco, concrete, brick, masonry, and wood. Advantages of the paint are listed and complete application directions for all surfaces are detailed. (Bulletin 5402) *General Paint Corp.* . . . for your copy circle No. 202

16 pages on rust-resistant compound

Parco compound, a rust-resistant finish for iron and steel, is treated in this 16-page booklet. The equipment installations necessary are illustrated and discussed and types of products on which the compound can be used are pictured. One-year and 28-month exposure tests made with the compound are discussed with the results of each pictured. (Bulletin A2512) *Parker Rust Proof Co.* . . . for your copy circle No. 203

Leaflet on advantages of aluminum paint

This one-page leaflet lists some of the advantages that result in painting buildings and equipment with pigmented aluminum paint. Three small pictures show a few applications of the paint. *Metals Disintegrating Co., Inc.* . . . for your copy circle No. 204



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TOWMOTOR FORK LIFT TRUCKS

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Here is an entirely new concept of fork lift truck performance—new styling, new precision operation and new maneuverability that sets the "Pace-Maker" series apart as the most significant advance in materials handling in recent years.

Towmotor engineering, carefully planned after a penetrating study of industry's needs, has created a number of unique, highly efficient features—combining to give you surprising economy for such powerful performance. The four all-new "Pace-Maker" models are designed to fit a wide range of materials handling needs, with lift capacities from 6,000 to 11,000 pounds.



America's Best-Engineered Fork Lift Truck

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New functional body design that provides ample under-clearance, greater driving comfort, easy accessibility to engine and parts.

Exceptional maneuverability through more positive operating control and dexterous load positioning.

More powerful engines—three new power-packed types for Gasoline, Diesel or LP-Gas models.

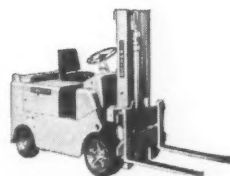
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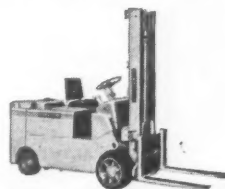
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Whatever your materials handling needs, it will pay you to first look into the new, cost-saving improvements offered by Towmotor "Pace-Maker" Series Fork Lift Trucks. For more detailed information write Towmotor Corp., Div. 6706, 1226 East 152nd St., Cleveland 10, Ohio.

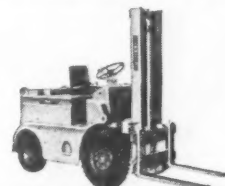
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NEW Model 600 with lifting capacities of 8000 and 9000 pounds.

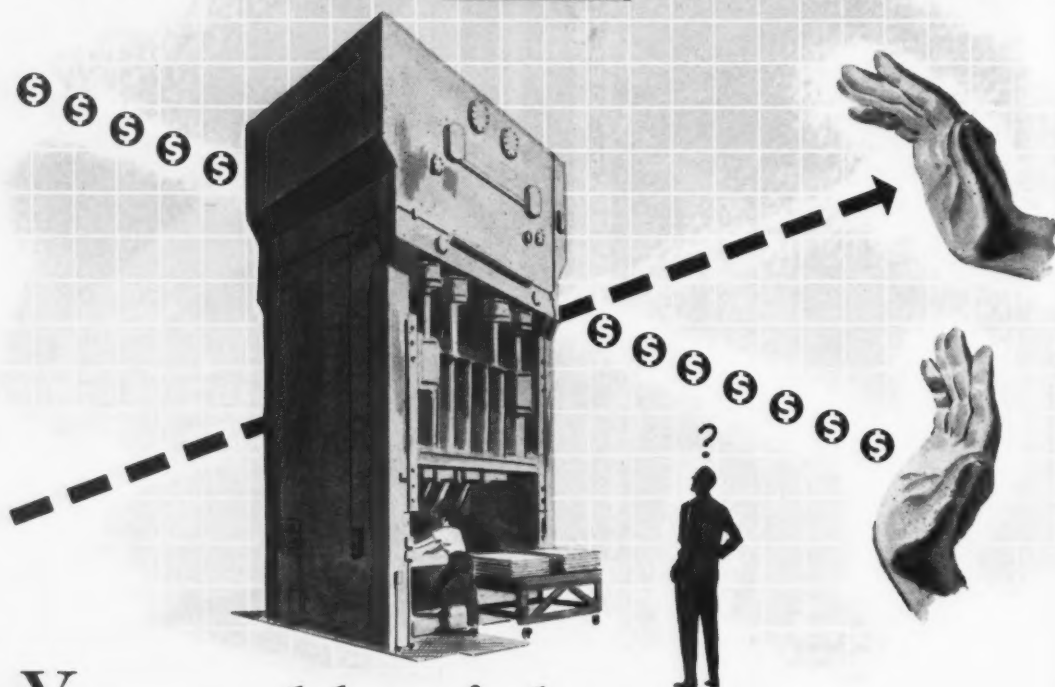


NEW Model 670 with lifting capacities of 10,000 and 11,000 pounds.



NEW Model 680-P with lifting capacity of 6000 pounds.

Can troubles in hydraulic systems be stopped before they get costly?



Yes...and here's how
Shell men and techniques
do it with an oil



"Correct the *causes* of trouble in hydraulic systems"—that was the task Shell Research men set for themselves. *Do* something about oil oxidation that creates sludge and lacquer... interferes with smooth, dependable valve action. Cut down, too, on *rust* and fight *wear* so as to prolong pump life.

Shell scientists did all that when they developed SHELL TELLUS OIL. This oil contains specially developed and thoroughly proven oxidation and wear inhibitors. In plant after plant, this oil has proven its ability to resist oxidation and foaming... to lengthen pump life and save the thousands of dollars that are often lost through hydraulic breakdowns.

Shell Tellus Oil is just one of the many fine products developed by Shell's 1500-man research team—a team with 25 years' experience in lubrication problems.

A telephone call can put this team to work solving your problems. Call in your Shell representative today.

SHELL TELLUS OIL



... for more details, circle No. 45 on Reader Service Postcard
WESTERN INDUSTRY — June 1956

What, where, and how to use paints

A chart on what kind of paint to use on various surfaces tells you at a glance where to apply 76 different kinds of paint. The back of the chart is an industrial paint index with information on how to select the right paint for maintenance needs. "The Barrier Against Rust" is a 12-page booklet devoted to a primer used for rust prevention with a discussion of it and many application pictures. "Saving Old Roofs" explains Tropical's system of roof repair and maintenance, while a fourth booklet explains aluminum paints for interior, exterior, and heat resisting uses. Tropical Paint & Oil Co. . . . for your copy circle No. 205

Article on "Super" paints of the future

This three-page article, called "A Lasting 'Showroom Look'," gives a general idea of the types and colors of paints that will be available for general use in the future. Although the article deals mainly with paints for automobiles, some of these coatings will also be available for industrial use. Subjects covered include the possibility of dispensing with bake ovens, trend toward man-made substances, prepaint treatment for aluminum bodies, and a discussion of some of the paints being readied for introduction. Rinsed-Mason Co. . . . for your copy circle No. 206

Reference chart for use of color for safety

A 12 x 17-in. chart outlines the use of color in safety practices for protection of property and personnel. The chart contains information on pipeline identification by color, a system that uses five main classes and colors, and a uniform color code for safety, using six basic colors and a series of symbols. An industrial enamel color card is available chipped to show each of the colors used. Atco Co. . . . for your copy circle No. 207

How to protect hot metal surfaces

General Paint's Hi-Heat resisting finishes for hot metal surfaces are detailed in this four-page booklet, which lists properties and a wide variety of applications. Condensed specifications are included for seven different finishes as well as surface preparation and application information. (Bulletin 5311) General Paint Corp. . . . for your copy circle No. 203

Three data sheets on rust preventives

A four-page notebook leaflet treats a general heavy-duty rust prevention called "A Special" designed to protect metal from weathering, water, or any corrosive atmospheres. Instructions are given for preparation of the surface, application, and coverage along with many pictures of actual applications. Two other leaflets treat coatings for aluminum, discussing preparation of surface and application also. Dearborn Chemical Co. . . . for your copy circle No. 209

Data sheet on heavy-duty corrosion coating

Nox-Rust 506, a heavy-duty mastic coating for conveyors, steel structures, hopper cars, and other equipment, is detailed in this data sheet, which describes the coating, lists its characteristics, and gives application data. Designed to withstand corrosive conditions, the coating has a life expectancy of from five to 10 years. Daubert Chemical Co. . . . for your copy circle No. 210

Leaflet on corrosion-resistant paint

"Blunt Corrosion with Duro-Kote" is a four-page leaflet on a corrosion-resistant vinyl resin dispersed in a quick-drying solvent, which is unaffected by acids, alkalis, oxidizing agents, fats, oils, or greases. Applications of Duro-Kote are pictured and explained and a list of possible uses is included. Leaflet concludes with pointers to keep in mind when working with the coating. (Bulletin DK-153) Electro-Chemical Engineering & Manufacturing Co. . . . for your copy circle No. 211

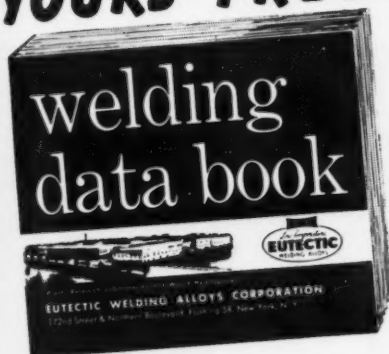
Chart-leaflet on bonding for organic finishes

Turcoat, a coating for metal which will bond paint or other organic coatings to the surface, is explained in a four-page chart-leaflet which also gives instructions for preparation for painting, preparation for other organic finishing, and suggests other uses for Turcoat. A chart lists the different types of Turcoat, purposes of coating, recommended uses, specifications, method of application and equipment, and gives operation cycles. Turco Products, Inc. . . . for your copy circle No. 212

LISTING CONCLUDED ON PAGE 78

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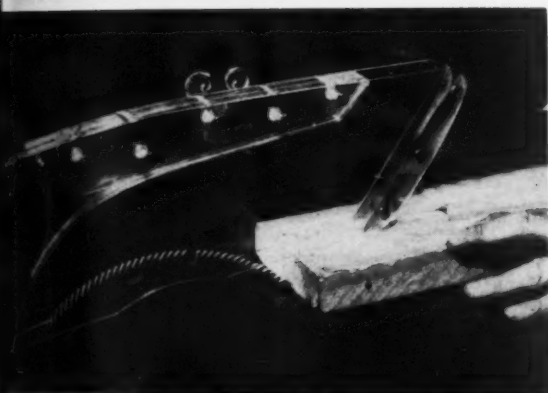
... for more details, circle No. 47 on Reader Service Postcard

WESTERN INDUSTRY — June 1956

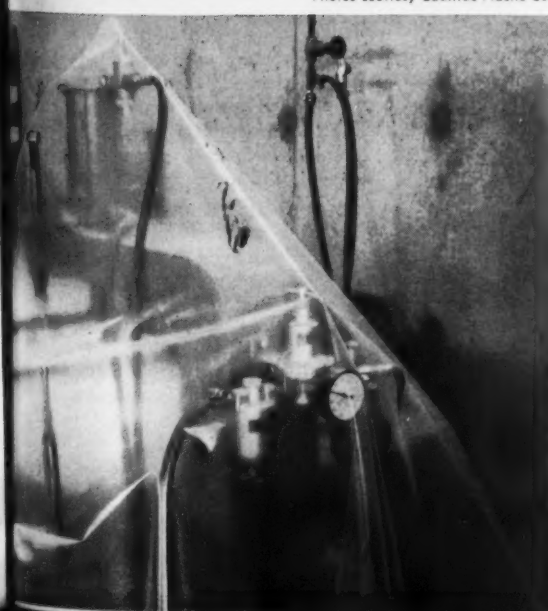
Do it yourself with . . .

PLASTICS

Photo courtesy Filon Plastics Corp.



Photos courtesy Cadillac Plastic Co.



AS a material for industrial plant maintenance, plastics is a fast-comer, now ranking third to steel and aluminum in the West. And currently only about one plant in each 100 in the West is taking advantage of plastics' potential for plant maintenance applications.

Because plastics' role has mushroomed so rapidly, there's a scarcity of knowledge about the characteristics of the various plastics suitable for plant maintenance applications and the ways in which they can be used. Distribution channels are still so new and relatively unknown that no one has a clear idea of how to go about purchasing plastics for plant use.

WESTERN INDUSTRY is, therefore, presenting this special report to show you how plastic materials—sheets, tubes, rods, film, panels—can be used in your plant to help cut costs, and save time and labor. The first part presents some of the properties of the eight thermoplastics most suitable for plant maintenance. We've discussed some of the common uses of these plastics—you can probably think of dozens more—and followed this with reviews of the best available booklets on plastics. Our directory will give you an idea of the Western plastics distribution picture.



A CIRCULAR SAW is one of the best tools for cutting acrylic plastics, like this one being used to saw a piece of Plexiglas for a window.



DRILLING ACRYLIC PLASTICS is very easy. Here a hole is being drilled in a Plexiglas sheet, which is scheduled to be mounted later as a sign.



ACRYLIC RODS are available in many sizes—from $\frac{1}{8}$ to 10 in. In general they work much like copper or brass, and are easily turned.

Understanding and working with plastics

THERE are eight plastics, all of the thermoplastic or heat-softening family, that are most suitable for use in plant maintenance. These thermoplastics, which are formed into their final shapes by cooling and can be heated and molded again, are available in stock shapes—sheets, rods, tubes—and can be worked, in most cases, with standard shop equipment.

Here's a brief rundown of the top eight—what they are, how they can best be worked, stock forms available, sizes, and maintenance applications for which they are particularly suited.

Acrylic plastics (commonly known as Plexiglas)

Properties include outstanding transparency, even surpassing glass, shatter resistance, high impact strength, and resistance to chemicals and water, as well as outdoor weathering. Acrylic plastic is dielectric, dimensionally stable, and easily worked. It has the unique property of piping light around a curve or angle, diffusing it over an entire surface from a single source. It is available in a wide range of colors, which are either transparent, translucent, or iridescent.

Acrylic plastic can be worked by many means, among them machining, sawing, drilling, carving, hot forming, and solvent welding. Any saw that can be used for wood or metal can be used for the acrylics; the circular, band, or jig saws are particularly good. When cutting thick plastics the

circular saw is best and it should be hollow ground or have set or swage teeth. Where flat sheets are to be cut in curves or formed parts are to be rough trimmed, the band saw works best. Jig saws are most satisfactory for cutting closed holes, although they don't work well on thick or multiple sheets. In general acrylic plastics work much like copper or brass.

When it comes to forming, hot forming is recommended as the best method and forming temperatures are low—220 to 300 deg. F. Cold forming isn't recommended unless the material is thin and the radius of curvature to which it is formed is at least 180 times the thickness of the sheet.

Acrylic plastics are available in extruded or cast sheets, rods, and tubes. Usually the extruded forms are less expensive, but the cast are tougher, harder, more transparent, and more easily machined. Sheets come in sizes of $\frac{1}{32}$ to 10 in., rods $\frac{1}{8}$ to 10 in., and tubes, OD. $\frac{1}{4}$ to 12 in.

Vinyl plastics (rigid and flexible)

Perhaps the most outstanding feature of the vinyl plastics is their toughness, which permits them to be used in very thin sections. A particular advantage of the flexible vinyl is that it can be flexed continually

without cracking. Both rigid and flexible vinyls have chemical and water resistance, dielectric, high impact strength, and are easily printed. Both types are available in a variety of colors, transparent to opaque.

Rigid vinyl plastics may be machined, cut, ground on an abrasive wheel similar to those for metalworking, die cut, drilled, heat formed, hot or cold bent, or blow molded, but they have a comparatively low melting point and need a coolant while being worked. For sawing an underwater saw with hardened steel blades is best, although you can use a band or circular saw at slow speeds. Tools used for metal cutting will serve for turning, facing, boring, or chasing.

In forming, the vinyls heat quickly by any heating method where the temperature can be controlled so that it doesn't exceed 300 deg. F. Cold bending may also be used if the bends needed aren't too sharp or small in diameter; sharp bends create high stress concentrations which will result in crazing or brittleness over a period of time and consequently cause the plastic to fail while being used.

For flexible vinyl plastic shearing, die cutting, heat sealing, cementing, and sewing all work well.

The vinyls are available in calendared or cast films and sheets, extruded flexible tubing, and tape. The film and flexible sheeting is stocked in .002 to .04-in. sizes, while the rigid sheet comes in .010 to .125-in. sizes and the tubing in OD. $\frac{1}{8}$ to $2\frac{1}{2}$ in.

Our thanks principally to Cadillac Plastic Co. and Filon Plastics Corp., and also to other plastics manufacturers for information made available to Western Industry for this special section on plastics.

Acetate plastics

The acetates are another tough plastic that can be used in thin sections. They have high impact strength and are easily worked, are also gas permeable and dimensionally stable. Available in clear and a variety of transparent colors, the acetates take printing well.

Acetate plastics may be worked by turning, sawing, drilling, hot forming, die cutting, shearing, scoring, drawings, and stitching, and also cement well. Available stock includes sheets and rolls in sizes .003 to .25 in.

Polystyrene plastics

Chemical resistance is the outstanding property of the transparent polystyrene plastics, which are unaffected by most acids and alkalis. They also have dielectric, low temperature, and impact strength. Like the acrylics they will pipe light.

Of the eight plastics most useful for maintenance, the polystyrenes are the most difficult to work. In machining, temperatures over 180 deg. F. will mar the cleanliness of the cut and will produce a strained part which may fail later in use. A coolant is absolutely necessary. A stream of air is best as it removes the trimmings at the same time, but clear water, soap and water, or solutions of water with a completely aliphatic cutting oil can be used. Common cutting oils or kerosene will cause cracking and crazing and shouldn't be used. A band or circular saw can be used at low speeds.

Drilling polystyrene plastics, if done at high speeds with polished or chromium plated flutes, is relatively simple, and lathe work is easy if sharp tools with slight rakes and large clearances are used. Polystyrene may also be vacuum formed.

Sheets in 1/32 to 1-in. sizes, rods, in sizes 1/8 to 6 in., and tubes in OD. 1/4 to 2-in. sizes are available from regular stock.

Polyethylene plastics

Polyethylene plastics are perhaps the most widely used in maintenance because of their low cost. They are lighter than water, are dielectric, and have good water and chemical resistance. They are tough and flexible, and come in a variety of colors, milky translucent to opaque.

Polyethylene is easily machined, although it too requires a coolant, since it is a poor conductor of heat. It's not as temperamental as polystyrene and any common coolant can be used.

COMPARISON OF PLASTIC PROPERTIES

	Transparency Percent of transmission	Chemical Resistance				Dielectric strength short time, v. per mil	Mechanical strength		Weight (specific gravity)
		weak acids	strong acids	weak alkalis	strong alkalis		tensile psi	flexural psi	
Acetate	85 _e	E	E	E	E	250-300	4,500-7,500	6,000-10,000	1.28-1.32
Acrylic	90-92 ₁	R	E ₂	R	R	450-500	7,000-8,000	12,000-17,000	1.18
Kel-F	50 _e	R	R	R	R ₄	400	5,700	8,250	2.1
Nylon	.....	R	E	R	R	385-470	10,900	13,800	.14
Polyethylene	.....	R	E	R	E	460	1,500-1,800	.....	.92
Polystyrene	88-90 ₁	R	E ₂	R	R ₃	500-700	5,000-9,000	8,000-16,000	1.04-1.065
Teflon	.....	R	R	R	R	480	1,600	.....	2.1-2.3
Vinyl rigid flexible	85	R	R	R	R	425	6,000-7,000	12,600-14,500	1.34-1.45
						300-400	1,500-3,500	.....	1.16-1.3

1 also have property of piping light

2 oxidizing acids only

3 soluble in aromatic and chlorinated hydrocarbons

4 halogenated compounds cause slight swelling

R resistant

E effected

e average estimate

A band saw serves well for cutting and a standard screw machine for turning. A modified machine twist drill could probably be used if you're careful.

For sanding a wet sanding process is best or the heat will cause gumming. Polyethylenes can also be sheared, die cut, stamped, heat sealed and formed, and stitched.

Film and sheet are available in .0015 to 12-in. sizes, rods and slugs from 1/4 to 12 in., and tube from OD. 1/4 to 2 in. Tape is also made from polyethylene.

Nylon

Nylon, the most well known plastic commercially, has many properties that suit it to plant maintenance applications, the most important being its self-lubricating characteristic. Extremely tough and strong in thin sections, it has high abrasion and temperature resistance, and good chemical and water resistance. It is flexible and lightweight and is available in translucent to opaque types.

It lends itself well to machining, grinding, sawing, drilling, and stamping. A hand saw is the best to use,

and, again, nylon is a poor conductor of heat so heat caused by machining must be dissipated; common coolants can be used. When sanding, use a wet process or nylon, too, will gum. A standard screw machine will serve for turning, also a modified machine twist drill could probably be used.

Nylon comes in strips, slabs, rods, squares, hexagons, discs, and tubes. Strips are .010 to .125 in., slabs 3/16 to 1 in., rods, etc., 1/8 to 5 in., and tubes, OD. 1/16 to 3/8 in.

Teflon and Kel-F

The outstanding property of Teflon and Kel-F is their inertness to almost all known chemicals. They are the most slippery material known, and consequently non-sticking. Unaffected in service between extremely low and high temperatures, they have dielectric, zero water absorption, and are tough and flexible. Kel-F is available in colors, transparent to translucent.

Both are easily machined, and lend themselves to sawing, drilling, and die cutting. They are available in sheets from 1/32 to 2-in. sizes, tape from .002 to .06 in., rod from 1/8 to 6-in., and tube from OD. 3/8 to 2 in.



Photo courtesy Rohm & Haas Co.

TRANSPARENT PLASTIC SHEETS, shaped to form covers, protect work in process from dust particles and other contamination.

How to use plastic materials for plant maintenance



TEMPLATES MAY BE TRACED on plastic sheets with a scoring instrument or jack-knife blade, then snapped out by hand (above). Sheets also make good safety shields (below).

Photos courtesy Cadillac Plastic Co.



THERE are many ways that plastic sheets, film, tape, and tubes can be used to good advantage in your plant. Here are some ideas for putting these plastic materials to work for you; when you start using them, you'll think of many more.

Sheets

Of all the forms of plastics available for plant maintenance, the rigid and flexible sheets are the most versatile. Practically the only thing you can't make from a plastic sheet is the thing you haven't thought of yet!

One of the most important roles plastic sheets can play in your plant is in the field of electrical maintenance. Acid resistant, anti-corrosive, and insulative plastics, such as the acrylics and vinyls, can be widely used in all types of electrical applications. Plastic sheets make good light diffusing pans, fixtures for fluorescent lighting, and reflectors because they yield a glare-free and diffused illumination. They can also be used for panel boards, switch plates and boxes, insulators, battery cases, insulating tape and tool handles, and electro-plating tank liners.

Plastic sheets also serve well in structural maintenance. Window panes, skylights, canopies, and partitions can be made from them.

Signs and displays are another field in which plastic sheets excel. The

acrylics particularly provide a good background for painted letters. Entrance, exit, and directional signs may be made from them, as well as name plates, price tags, and inventory markers. All kinds of charts, bulletin and blackboards, and show and display cases are easily formed. Since the sheets are lightweight and unbreakable, they make excellent portable displays.

Transparent plastic housings, fashioned from sheets to cover products or working models, can be a valuable sales aid by permitting the customer to watch the operation of the product. Actual working models can also be made from the sheets.

Other uses for sheets around your plant might include templates, machine housings, handles, knobs and levers, window shades, pipe wrappings, and windshields.

Logan City Diesel Plant in Logan, Utah, recently solved a water seepage problem with calendered vinyl sheeting. Water seepage of 2 to 3 gal. a minute from a 5,000-gal. concrete cooling tank was virtually eliminated by lining the tank with plastic sheeting. The sheeting, 20/1000 in. thick, was fabricated to fit the inside of the tank and suspended by redwood strips bolted to the top of the tank walls. Flanges were placed around the pipes projecting into the tank to form a tight seal.

Barber-Webb Co., Los Angeles.

fabricated a complete exhaust system from rigid vinyl sheets. The system, made for an aircraft plant to conduct fumes from processing and planting tanks containing hydrochloric, nitric, and hydrofluoric acids, was fabricated using standard shop methods in the layout and cutting of the sheets.

Barber-Webb has also constructed dumping tables, baffles in fume scrubbing tanks, and complete acid tanks from plastic sheets.

Film

Most plant uses for plastic film are in the fields of electrical maintenance and packaging operations. Because the film will withstand high temperatures, it is good for insulation and for packaging food and drug items, where the film must weather steam sterilization temperatures.

Because it can be bonded, plastic film can be used for laminations and for covering table tops. Like plastic sheets, it can be used for tank and drum liners.

Tape

Plastic tape has a number of uses as insulation in electrical maintenance. It will serve as a heat and moisture barrier for cables, splicing for cable joints, turn insulation for circuit breaker coils, ground insulation for motor coils, and wrapping for hook-up wires.

Easily printed and bonded, it also makes good labels for practically anything—shelves, cartons, clothing, etc.

Tubes

Like plastic film and tape, plastic tubes can find many uses as electrical insulation because they withstand high frequencies and temperatures. For encasing a wire or cable you can take a tube one size smaller than the cable, dilute the tube by immersing it in a solvent—15 to 20 min. gives 20 to 30% dilation—and after shaking off the excess solvent, slip it over the cable. When the solvent evaporates, the tube shrinks and shapes itself into a smooth, tight fitting cover. This same procedure can be used to cover other objects as well.

Plastic tubes can be used to replace rubber for lubricating and air tubes and will also carry gas, water, and other liquids. You can use both plastic and metal fittings with them.

Plastic tubes in large sizes will serve as well as sheets for making cylindrical fixtures for fluorescent lighting, diffusing pans, and reflectors.

The what, why, and how-to of plastic-reinforced panels

TRANSLUCENT Fiberglas panels, thin and lightweight as well as practically unbreakable, are finding constantly increasing use in many industrial applications. When you consider that they also resist all kinds of industrial fumes as well as many chemicals, require practically no care when handled and little maintenance, and in addition transmit a soft and diffused working light, it's no wonder.

There are two kinds of Fiberglas reinforced plastic panels—flat and corrugated. Both are available with either smooth, crinkled, or granitized surfaces. Corrugated panels are the most commonly used and have the widest number of applications.

Flat panels are made for use as panes in framed glazing; you can purchase and install them as needed to replace broken panes of glass. Installation methods are practically the same as those used for glass, but the panels can be installed a lot quicker because they're light and easy to handle. Although the initial expense of plastic panels is greater than that of glass, they're less expensive in the long run because less labor is involved in installation, they don't require costly mountings, and they're practically unbreakable.

Granitized panels are among the most recently developed in the field

and are particularly good for skylights, sidelights, and windows. Their pebbly surface is said to provide better erosion resistance than the ungranitized panels, and they're also more resistant to some acids, particularly sulfuric.

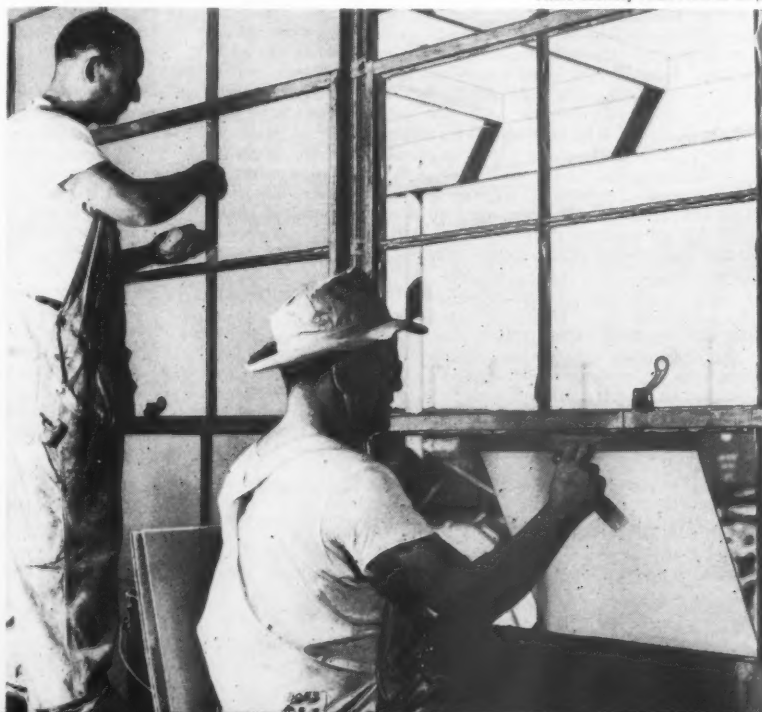
Standard panels are only 1/16 in. thick and weigh only 8 oz. per sq. ft., but the combination of literally millions of glass fibers and polyester resin results in a very strong material. And when parallel nylon strands are added, strength is increased, with panels of the most commonly used 2½-in. corrugation able to support over 200 lb. static load per sq. ft. on unsupported 4-ft. spans. With lateral supports, the load can be much greater.

One of the best reasons for using plastic panels is for the kind of light they transmit. The myriad of glass fibers laminated in each panel individually refracts the rays of the sun, and converts sharp glare to a soft glow, which is easy on the eyes and pleasant to work in. These panels admit anywhere from 20 to 90% of the light, depending on their color.

Often color selection is based on the amount of light desired for a specific installation. Most panels come in semi-clear and the green and blue color ranges, although you can also

TRANSLUCENT FIBERGLAS PANELS solve many problems when used as panes in framed glazing. Light and easy to handle, they're quickly installed, and less expensive in the end because they're practically unbreakable.

Photo courtesy Filon Plastics Corp.



purchase some panels in reds and yellows.

Where these panels have been used, maintenance men have enthused about the ease with which they can be handled. A panel 12 x 3 1/2 ft. can be carried easily by one man because it weighs only 20 lb. And if he drops it, it won't break; if it's more convenient to walk on the panel than around it, he can do so without damaging it.

Maintenance men are also impressed with the simple installation of the panels. They nest with corrugated metal or asbestos, and can be nailed in place without costly framing—and without breaking too. The range of standard sizes is large so most installations can be made without any cutting. However, if cutting is necessary, it can be done with any saw.

Because plastic panels are shatterproof, they seldom break; they will remain in service almost indefinitely

in interior uses. Therefore, replacement costs are held to a minimum. And the fact that they don't break makes them much safer than glass. In case of an explosion, for instance, there is no danger from flying particles.

Changes in the weather have little effect on them either; they withstand rain, snow, hail, wind, and sun, and they don't rot, warp, or corrode. After prolonged outdoor use colored panels may fade some but this has no effect on the strength of the material.

Maintenance becomes simply a matter of an occasional washing, which can be done with a hose.

Early this year Underwriters' Laboratories tested and approved a fire-retardant panel, developed by Filon Plastics Corp., which can be used in fire zones and wherever building codes specify fire-resistant materials. The UL label on the panel shows a flame

spread rating of 40 to 75. These fire-retardant panels, made from Hetron polyester resin and reinforced with both Fiberglas and nylon, will burn at the point where a hot flame is applied directly, but will snuff out as soon as the flame is removed and will not support combustion. These panels in other ways look and act exactly like their non-fire-retardant brothers.

There are many industrial uses now for these Fiberglas reinforced plastic panels, and undoubtedly a lot that haven't even been thought of. In addition to their uses for windows, partitions, and skylights, the panels make good shields for men and equipment, boxes, and shower stalls, to name only a few uses. Outdoors they are good for roofing for docks and sheds, as low-cost fencing, for windbreaks, carports, canopies, and awnings. One of the most recent uses of plastic panels is in truck bodies.

30 FREE BOOKLETS ON PLASTICS

Here are reviews of the best available booklets on plastic materials. Obtain your selection by circling item numbers on rip-out postcard, page 111.

UNDERSTANDING & WORKING WITH PLASTICS

How's, why's and wherefore's of plastics

"The ABC's of Modern Plastics" is a 44-page digest-sized book which tells the story of the making of plastics and plastic items from natural resources to the finished product. Containing basic facts on the sources and production of plastics, it presents an account in layman's language of the chemistry behind plastics development. The book opens with the "Beginning of Things," and is divided into six chapters titled: What Are Plastics?, How Are Plastics Made?, How to Turn Plastics into Products, Why Do We Use Plastics?, Where Are Plastics Used?, and Something Special and Something New. Phenolic, vinyl, polystyrene, and polyethylene are explored in greater detail in the final section of the book. Well illustrated with drawings and charts. *Bakelite Co.*

... for your copy circle No. 290

Properties and applications of Teflon

This 12-page booklet opens with a discussion of the chemical, electrical, thermal, and mechanical properties of Teflon, which is followed by a discussion of its industrial applications. The final pages are devoted to standard sizes, thickness and weight charts for Teflon sheets, tape, cylinders, bars, extruded tubing, rods and shapes, and electrical spaghetti. (Bulletin 300) *United States Gasket Co.*

... for your copy circle No. 291

Fabricating and using nylon

The advantages of nylon are detailed in this 16-page booklet, along with an explanation of how nylon parts are produced and a section on uses for nylon. Fabricating techniques and technical help sections are included, along with charts and drawings of nylon shapes, including rod, strip, slab, tubing, and tubular bar. The last page contains a properties chart. *Polymer Corp. of Pennsylvania*

... for your copy circle No. 292

Chemical, physical properties of Corralux

This four-page technical data brochure details the chemical and physical properties of Corralux, a translucent structural panel.

Four typical installations—skylights, sidelights, roofs, and partitions—are illustrated with comprehensive line drawings giving measurements, location of bolts, laps, and other materials used in installation. Specifications are included. *Corralux Div., LOF Glass Fibers Co.*

... for your copy circle No. 293

Fact file on plastic compounds, resins

Molding compounds, resins, extruding, calendering, and coating materials, and fabricating materials are all treated briefly in this 12-page booklet. Forms supplied and fabricating methods, typical uses, general properties, and performance characteristics are given for all the materials in easy-to-read chart form. Well illustrated in two-color. *Monsanto Chemical Co.*

... for your copy circle No. 294

How to work with Plexiglas

If you want to cut, machine, form, or join Plexiglas this 20-page book will tell and show you how to do it. Complete with line drawings illustrating every operation, the book discusses layout, sawing, punching and drilling, routing and shaping, turning, finishing, filing, scraping, sanding, buffing and a variety of forming techniques. It also illustrates some of the tools used in the processes. *Cadillac Plastic Co.*

... for your copy circle No. 295

Guide for working with plastics

This 72-page guidebook gives a short history of the origin of plastics, the size of the industry today and a good differentiation between thermosetting plastics and thermoplastics. Pages are devoted to sign letters and laminates. Instructions are included for making molds, installing Formica, machining polystyrene and nylon, working with Plexiglas and Lucite. Contains many charts, illustrations, and actual samples of the plastics discussed. *Fry Plastics Co.*

... for your copy circle No. 296

Working with rigid vinyl plastics

This is a complete 38-page working guide for rigid vinyl plastic sheets. Opening with a discussion of the mechanical, chemical, electrical, and light transmission characteristics of vinyl, the book

continues to explain forming, machining, finishing, cleaning and polishing, and cementing and bonding. Printing and marking techniques are also included as well as a short discussion of available calendered and planished sheets. *Cadillac Plastic Co.*

... for your copy circle No. 297

Background data on Teflon, nylon

Two books of more than 50 pages, devoted to Teflon and nylon, give comprehensive background data on both plastics. Each book includes a short history of the plastic, along with its properties and primary uses. Processing techniques are thoroughly covered along with the equipment that is used in processing the two plastics. These are not do-it-yourself books but rather sources of extensive information on Teflon and nylon. *E. I. du Pont de Nemours & Co., Inc.*

... for your copy circle No. 298

PANELS

What to look for in plastic panels

"What to Look for in a Good Translucent Building Panel" is a four-page guide for anyone planning to use plastic panels. It covers weight and thickness, glass content, strength, light transmission, surface finish, pitch and depth, and weather resistance, telling you what is important in each category and why. Included with the leaflet is a sheet on how to write a complete specification for corrugated translucent panel. (COR-991) *Corrulux Div., LOF Glass Fibers Co.*

... for your copy circle No. 299

Indoor and outdoor uses for plastic panels

An eight-page leaflet on Fiberglas and nylon plastic panels lists and pictures many indoor and outdoor uses of the material and has complete construction details for skylights, sidelights, roofs, and awnings. A chart of standard types and sizes gives weight, corrugation, lengths, finish, color, and light transmission values. *Filon Plastics Corp.*

... for your copy circle No. 300

Property charts for structural panels

This eight-page booklet includes in chart form physical and thermal properties of structural panels and also load deflection, allowable load, dielectric properties, chemical resistance, and specifications. With it is a leaflet on the Security panel, a plastic panel reinforced with expanded metal, a leaflet on installing flat panels, one on fire-retardant panels, and a case history on skylight panels. *Resolite Corp.*

... for your copy circle No. 301

How to install skylights and sidelights

Three notebook leaflets illustrate in detailed drawings the steps involved in installing and fastening panels for skylights and sidelights. One leaflet pictures and discusses sawing, drilling, bolting, and nailing panels. Specifications are included. *Corrulux Div., LOF Glass Fibers Co.*

... for your copy circle No. 302

How to install panels and panes

How to cut, drill and punch, and secure panels for windows and skylights is explained briefly in this four-page leaflet which pictures many industrial applications. A chart listing the advantages of the panels is included, along with complete specifications. (Leaflet IC95R) *Alsynite Co. of America.*

... for your copy circle No. 303

SHEETS

How to make windows from Plexiglas

"Window Glazing with Plexiglas" is a 16-page booklet with 12 line drawings showing glazing details and instructions for cutting Plexiglas for various sizes of windows. Properties and advantages of Plexiglas are included as well as pictures of applications. (PL-23c) A second booklet, "Daylight Control with Plexiglas," shows in detailed drawings what Plexiglas louver panels are, what they will do, where they may be used, and what types are best, levels of illumination, what sizes to use, and how to install them. A special section shows the path of the sun as it is related to lighting problems. (PL-226a) *Rohm & Haas Co.*

... for your copy circle No. 304

How to install Plexiglas window glazing

Complete instructions for installing and cleaning Plexiglas window glazing are given in a six-page leaflet which contains two pages of illustrations. The leaflet is divided into sections on how to glaze lights up to 24 in., from 24 to 48 in., and over 48 in. The clean-

ing section includes general maintenance and removal of tar, plaster, or paint from Plexiglas. A final section is devoted to storing, masking, and cutting Plexiglas. (Leaflet PL-134B) *Taylor & Art, Inc.*

... for your copy circle No. 305

How to use Plexiglas for lighting

"Outdoor Lighting with Plexiglas" has 12 pages of information on lighting large outdoor areas, outdoor fluorescent lighting, and illuminating industrial plants and parking areas. Cost factors are considered, as is glare, exposure to weather, and maintenance. Several pages of pictures show applications. (PL-242) A second book discusses architectural lighting for large areas, showing some of the effects possible with plastic sheets. (PL-202) *Rohm & Haas Co.*

... for your copy circle No. 306

How to use Lucite for lighting

Different ways to use Lucite for lighting purposes are illustrated and described in this 12-page booklet, which also gives a complete property chart and spectrophotometric data. Processing, fabrication, and maintenance are discussed briefly. (Booklet A-737) *E. I. du Pont de Nemours & Co., Inc.*

... for your copy circle No. 307

TUBES

Tubing for transmitting fluids

This 28-page booklet on tubing made from Tygon, a modified vinyl plastic, opens with several picture pages showing applications. Other sections discuss the use of plastic tubing in the food and beverage industries and chemical plants. Chemical resistance characteristics are given in chart form, as are physical properties and the effect of heat and age on tensile strength, hardness, and elongation. A section on how to handle Tygon tubing concludes the book and treats cleaning, joining, elasticity, fittings for the tubing, and stocks available. (Bulletin T-87) *United States Stoneware Co.*

... for your copy circle No. 308

How to flare and form plastic tubing

A section of this 32-page booklet pictures and discusses the techniques involved in flaring and forming Saran tubing, detailing the different methods that can be used. Other facts about Saran are included, along with sections on pipe, pipe fittings, rods, and tube fittings. (Leaflet PL324-255) *Dow Chemical Co.*

... for your copy circle No. 309

GENERAL INFORMATION

157 ways to use plastics for maintenance

This 16-page book is full of ideas for putting plastics to work in plants. It lists and pictures plastics as they may be used for shields, safety equipment, guards, structural and protective glazing, electrical processing and illumination equipment, working models, and displays. Specifications are given for rods and tubes, and sheets of acrylic, Plexiglas, Tygon and Teflon. *Cadillac Plastic Co.*

... for your copy circle No. 310

How to use plastics to combat corrosion

A 14-page book of pictures shows the application of plastics in industry for purpose of combating corrosion. Included with it is a four-page leaflet on the PVC used, which includes mechanical, electrical, and thermal property charts, a chart on chemical resistance, and a list of the types and sizes of the plastic materials available. *H. N. Hartwell & Son, Inc.*

... for your copy circle No. 311

Price list for sheets, rods, tubes

This 52-page catalog and price list for thermoplastic and phenolic sheets, rods, tubes, and films includes those made of acrylic, nylon, Teflon, Kel-F, vinyl acetate, polyethylene, and polystyrene. In addition to comparison tables of chemical, electrical, and mechanical properties, the book lists available sizes, weights, colors, grades, and purchasing specifications. A separate eight-page data folder gives properties and available sizes, and pictures typical applications of thermoplastic sheets, rods, and tubes. *Cadillac Plastic Co.*

... for your copy circle No. 312

Facts on plastics for insulation

Plastic tubing, tape, and film as it can be used for insulation purposes is the subject of this notebook. In addition to application pictures, the book details physical and electrical properties, colors, standard lengths of the materials and includes a section on how to store the insulation. *Natur Corp.*

... for your copy circle No. 313

Finding and working with a plastics' supplier

BECAUSE plastic is not just one animal—as steel, for instance—but an entire family, buying from a plastic supplier is different than filling your steel requirements from a steel warehouse or mill. Personalities in the family differ from one another as much as steel from brass or aluminum.

When you give your plastics supplier specifications for the plastics you want, also give him complete information about the contemplated applications. No one outside the field is as well informed on plastics as the supplier and you can make his knowledge work for you by giving him all the information you have. He may be able to suggest a cheaper plastic that will do your job as well, or a plastic of special grade that meets a more rigorous range of prop-

erties. He can also tell you how to work with plastics.

It's also a good idea to tell your supplier about your possible future needs. Plastic sheets, film, tubes, and rods are normally stocked in a complete range of sizes, thicknesses, and lengths. But if the plastics' supplier knows what you may be using, he can keep an ample stock of those plastics so he can give you better delivery service; this also eliminates the problem of tying up capital and floor space in inventory.

Here are some of the major plastics' manufacturers who make materials you can use for plant maintenance, and their Western outlets. From this group you may be able to find a firm near you that can become your plastics supplier.

ALSYNITE CO. OF AMERICA, 4654 De Soto St., San Diego 9, Calif.

Fiberglass building panels.
Branches
Calif., Danville—W. Dennis Barton, P. O. Box 282
Colo., Denver—A. B. Cotton, 1017 So. Adams St.
Mont., Billings—William Kennedy, 1145 No. 32nd St.

Representatives
Ariz., Phoenix—Momsen Dunnegan Ryan Co., 518 So. 3rd St. AL 8-7581
Calif., Long Beach—Compton Harman, 3636 E. Anaheim Ave., Phone 9-7076
Calif., Los Angeles—Fiberglass Engineering & Supply Div., Owens-Corning Fiberglass Corp., 941 E. 2nd St. EM 3-2769
Calif., Oakland—General Synthetics Corp., 3040 Market St. OL 2-6843
Calif., San Jose—Borchers Bros., 396 No. 1st St. CY 7-3404
Calif., Ventura—Peoples Lumber Co., 708 E. Meta St. MI 3-2181
Calif., Vernon—Triangle Steel & Supply Co., 3691 Bandini Blvd. AN 9-9111
Colo., Denver—Hallack & Howard, 7th and Larimer, MA 4141
Mont., Billings—Boorman Lumber & Supply, Inc., Phone 2-0545
Nev., Reno—Home Lumber Co. of Nevada, 275 Ralston St.
N. Mex., Albuquerque—Momsen Dunnegan Ryan Co.
N. Mex., Albuquerque—National Sales, Inc., 2522 1st St., N.W.
N. Mex., Albuquerque—Pittsburgh Plate Glass Co., 601 Haines Ave., N.W.
Also through W. P. Fuller & Co., with branches in most Western cities.

CADILLAC PLASTIC & CHEMICAL CO., 15111 2nd Ave., Detroit 3, Mich.

Sheets, rods, tubes.
See advertisement, page 78
Branches
Calif., Los Angeles—2305 W. Beverly Blvd. DU 5-3001
Calif., San Francisco—652 Polk St. OR 3-6640

CHARLES CROWL CO., 11667 McBean Dr., El Monte, Calif.

Sheets.
FILON PLASTICS CORP., 2051 E. Maple Ave., El Segundo, Calif.
Fiberglass structural panels.
See advertisement, page 68

Representatives
Ariz., Phoenix—Fiberglass Engineering & Supply, 1890 W. Fillmore. AL 8-4541
Calif., Bakersfield—Hopper Machine Works, Inc., 301 26th St. FA 5-9071
Calif., Fresno—Fiberglass Engineering & Supply, 427 P St. FR 6-0607
Calif., Sacramento—Fiberglass Engineering & Supply, 1615 Thornton Ave. GI 3-4814
Calif., San Diego—Maloney Specialties, Inc., 823 W. Laurel St. BE 9-4168
Calif., San Francisco—Fiberglass Engineering & Supply, 1200 17th St. UN 3-2380
Colo., Denver—Construction Specialties Co., 2625 Walnut St. KE 4-3271
Ida., Boise—Fiberglass Engineering & Supply, 2526 Ark St. Phone 2-3627

Nev., Las Vegas—Nevada Neon & Supply Co., 2536 Meadow Ave. DU 2-2721
N. Mex., Albuquerque—Fiberglass Engineering & Supply, 1011 Sawmill Rd.
Ore., Portland—Fiberglass Engineering & Supply, 406 N.W. Glean. CA 3-6361
Utah, Salt Lake City—Fiberglass Engineering & Supply, 336 So. 3rd St., W. EM 3-2769
Wash., Seattle—Fiberglass Engineering & Supply, 1248 6th Ave., So. SE 7030
Wash., Spokane—Fiberglass Engineering & Supply, 3044 E. Trent Ave. KE 0408
Wyo., Casper—Construction Specialties Co., 2200 W. 13th St. Phone 2-1437

GLASS LAMINATORS, INC., 524 1/2 1st St., Seattle 4, Wash.

Glowave (corrugated and flat Fiberglas building panels); Cardenas (decorative Fiberglas panels).
Representatives
Glowave
Ore., Portland—Morehouse Glass, 1902 S.E. Union Ave. BE 5-6641
Wash., Seattle—Palmer G. Lewis, 550 W. Idaho. SE 6661
Wash., Spokane—Aluminum Supply Co., No. 8000 Frankes Way. KE 0527

Cardenas
Calif., San Francisco—Cal-Craft Woven & Wood Fabrics, 407 Jackson Sq. DO 2-7096
Wash., Seattle—Ed Murphy, 761 Bellevue No. CA 5757
Also through W. P. Fuller & Co., with branches in most Western cities.

HARTWELL, H. N., & SON, INC., 947 Park Square Bldg., Boston 16, Mass.

Sheets, bars, blocks.
Representatives
Calif., Culver City—Horace Blackman Co., 5883 Blackwelder St. TE 0-4821
Wash., Seattle—Chemical Proof Corp., 625 Alaska St.

HEXCEL PRODUCTS, INC., 951 61st St., Oakland 8, Calif.

Panels, sheets, blocks.
Representative
Calif., Inglewood—A. C. Marshall, 1025 W. Arbor Vitae. OR 8-4121

L-O-F GLASS FIBERS CO., Corruglux Division, 3116 Van Owen Blvd., Burbank, Calif.

Panels.
Representatives
Ariz., Phoenix—Baker-Thomas Co., 300 So. 12th St.
Ariz., Tucson—Tucson Glass & Mirror, 414 No. 5th Ave.
Calif., Bakersfield—Griffin Steel & Supply Co., 625 Williams St.
Calif., Bakersfield—Steel Sales & Supply Co., 1221 Oak St.
Calif., Los Angeles—Thompson Glass & Paint Co., 702 E. Gage Ave.
Calif., San Francisco—A. B. Boyd Co., 1235 Howard St.
Mont., Great Falls—Montana Steel & Supply Co., P. O. Box 1137
Nev., Reno—Home Lumber Co. of Nevada, 275 Ralston St.
Wash., Seattle—Chamberlin Co. of America, 316 W. Lake No.
Wash., Seattle—Great Western Plastics Co., 1224 1st Ave. So.

POLYMER CORP. OF PENNSYLVANIA, Alton and Fairmont Aves., Reading, Pa.

Rod, strip, sheet, slab, tubing, pressure tubing, tape, spaghetti, plate.
Representatives
Calif., Los Angeles—E. Jordan Brookes Co. Inc., 5138 W. Jefferson
Calif., San Diego—E. Jordan Brookes Co. Inc., 3564 30th St.
Calif., San Francisco—E. Jordan Brookes Co. Inc., 671 Howard St.
Colo., Denver—Plasticrafts, Inc., 2804 N. Speer Blvd.

RESIN INDUSTRIES, INC., Olive and Guttierrez St., Santa Barbara, Calif.

Tape, rods, extruded shapes, electrical insulation sleeving.
Representatives
Principal hardware wholesalers and distributors of electrical insulation material throughout the West.

RESOLITE CORP., Zelenople, Pa.

Panels.
Representative
Calif., San Francisco—Western Asbestos Co. Building Products Division, 148 Townsend St. KL 2-3868

ROHM & HASS CO., Washington Square, Philadelphia 5, Pa.

Plexiglas sheets.
Branches
Calif., Los Angeles—5657 Wilshire Blvd. WE 1-1491
Calif., San Francisco—600 California St. DO 2-6664

SHAMBAN ENGINEERING CO., 11617 W. Jefferson Blvd., Culver City, Calif.

Rod, tube, sheet, tape, film, discs.
Representatives
Ariz., Phoenix—Tom J. McDonald, 4654 N. Central Ave. CR 4-5416
Calif., La Mesa—Joseph H. Lynch, 4862 1/2 Pine St. HO 9-3753
Colo., Denver—Toncray Equipment Co., 1712 Blake St. CH 4-1102

TAYLOR FIBRE CO., 1400 Palomares Ave., La Verne, Calif.

Sheets, rods, tubes.
Branches
Calif., Los Angeles—5392 Alhambra. MU 9131
Calif., San Carlos—Laurel St. LY 3-8813

UNITED STATES GASKET CO., 600 No. 10th St., Camden 1, N. J.

Sheets, tape, rods, tubing, bars, cylinder, discs, extruded shapes, electrical spaghetti.
Representatives
Calif., Glendale—Haskel Seals, 1226 So. Central Ave.
Calif., Millbrae—Haskel Engineering, 806 Adrian Rd.
Colo., Denver—E. C. Wild Co., 695 So. Garfield St.

NEW CUSTOMER-IMPROVED

General Electric Pacific '55' Gear-Motor

Simplifies Speed Changes, Handles More Applications

Completely redesigned to meet the increased demands being placed on modern industry, G.E.'s new Pacific '55' Gear-motor incorporates the many advances gained from over 25 years experience in gear-motor design and application. Simplified design of this packaged low-speed drive provides far greater versatility.

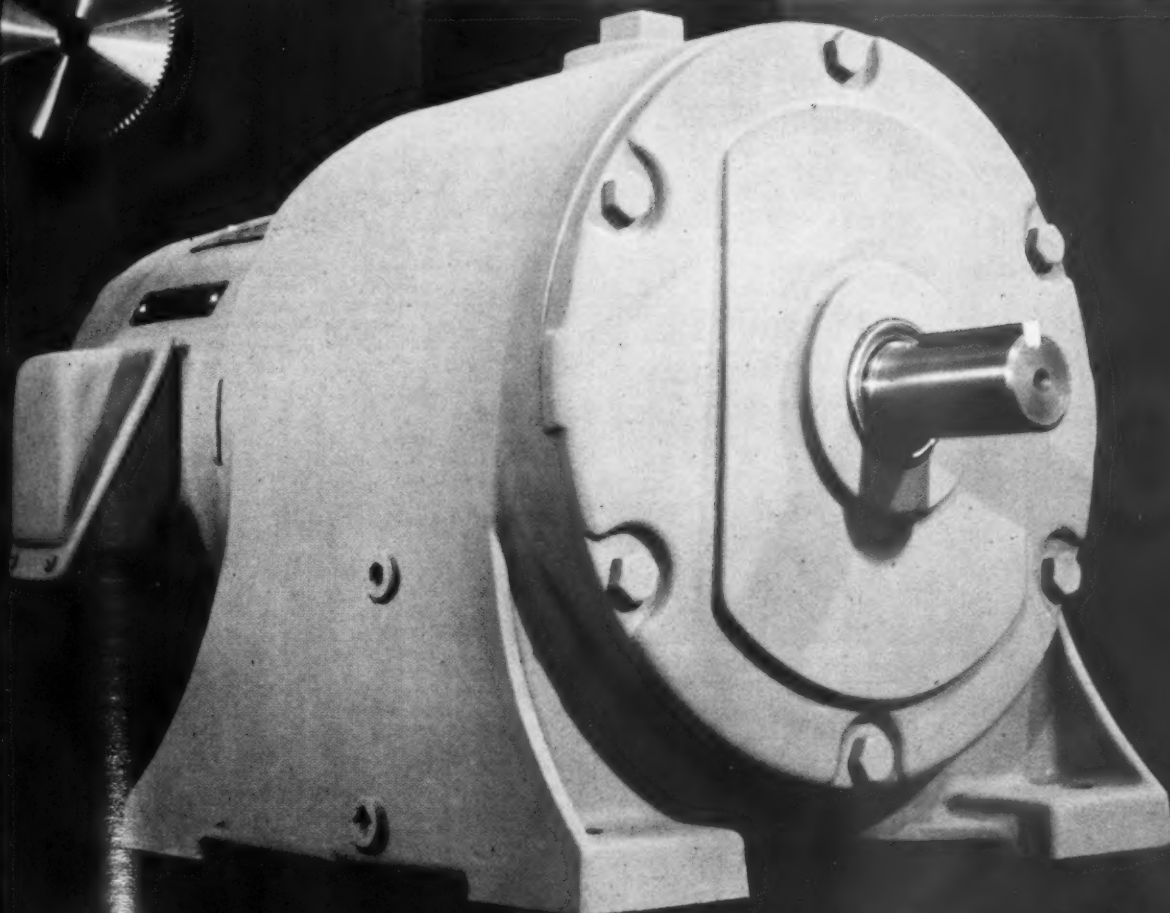
GREATER FLEXIBILITY: Motor can be replaced in minutes without disconnecting gear unit from load. The new Series "N" unit accommodates any G-E NEMA standard motor in the same frame size or horsepower.

LONGER LIFE: Double protective seals keep lubricant in—dirt out; concentricity of bearing bores assures precision line-up of gears.

REDUCED MAINTENANCE: New unit can be disassembled in three steps; breather and filler hole are combined for fast inspection.

NEW G-E PACIFIC '55' GEAR-MOTORS are now available from 1-5 hp, 520 to 13.5 rpm. Other ratings up to 50 hp will be available soon.

FOR MORE INFORMATION on the new Pacific '55' Gear-motor line, write for Bulletin GEA-6487, Section 852-1, General Electric Company, 235 Montgomery Street, San Francisco, California, or contact your nearest G-E Sales Office or authorized gear-motor supplier.



GENERAL  ELECTRIC

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SHEETS, RODS, TUBES
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RODS AND TUBES
- ▶ **ACETATE**
SHEETS, FILM, TUBES
- ▶ **NYLON**
RODS, TUBES, SHEETS, STRIPS
- ▶ **TEFLON**
RODS, TUBES, SHEETS, TAPE
- ▶ **VINYLLITE**
RIGID AND FLEXIBLE SHEETS & ROLLS
- ▶ **POLYETHYLENE**
FILM, SHEETS, RODS, TUBES
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☐ 157 Ways to Use Plastics for Maintenance ☐ How to Work with Plexiglas
☐ Send catalog and prices

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ADDRESS _____ CITY _____
COMPANY _____

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← ... for more details, adv. pg. 77, circle No. 48 on Reader Service Postcard

PAINT & PROTECTIVE COATING MANUALS . . . continued from p. 67

Report on penetration of coating into rust

This 20-page summary report, prepared for Rust-Oleum by Battelle Memorial Institute, concerns the development of a method to determine the degree of penetration of a protective coating into rust on steel. The method is discussed from preparation of a radioactive coating, which was the first step, to the results of the penetration study. *Rust-Oleum Corp.*

... for your copy circle No. 213

Data sheet on anti-skid coating

Making slippery surfaces safe with anti-skid coating is the subject of a data sheet on a rubber-based compound which produces an abrasive-type coating. Applications—including ladders, metal floors and showers—are included, along with a list of properties and application instructions. *Daubert Chemical Co.*

... for your copy circle No. 214

How-to data for iron phosphate coatings

"How to Apply Iron Phosphate Coatings to Steel in Preparation for Painting" is a 12-page book which opens with a discussion of the problems in painting steel and how to solve them and continues to list the advantages of the iron phosphating process. Methods of application and operating procedures are given along with many illustrations. *Oakite Products, Inc.*

... for your copy circle No. 215

How to whip rust problems

Rustmaster is General Paint's answer to rust problems and a list of its uses is included in this four-page booklet. A coated color chip is included, which shows what the rust coat looks like and its color. Applications are pictured and directions for applying the coating are included. (Bulletin 5309) *General Paint Corp.*

... for your copy circle No. 216

Data book on Bonderite paint base

Tests which have been made with Bonderite, a corrosion-resistant paint base, and their results are explained and pictured in this 24-page booklet. Many uses of the base are given and an article is included on how the base combats the forces that attack painted metals. Well illustrated with large pictures. (Booklet A-1223) *Parker Rust Proof Co.*

... for your copy circle No. 217

Alphabetical list of National paint line

This catalog of National Paint's complete line contains about 25 paints that are suitable for industrial use. Each paint is thoroughly described as to composition, resistance, use, and application. Among pertinent paints listed are aluminum, varnishes, enamels, and sealers. *National Paint & Varnish Co.*

... for your copy circle No. 218

Data sheet on heat-resistant paints

Heat resisting exterior and interior aluminum, and black paint are detailed in this six-page leaflet with several applications sketched. Leaflet also includes information of Rust-Tox rust-resistant coating, acid and alkali resistant paints, and floor and roof coating. *Skybryte Co.*

... for your copy circle No. 219

Data book on new spray painting products

DeVilbiss Co.'s new spray painting products are detailed in this maintenance painting booklet which also includes a discussion of the firm's P-CGA spray gun which can be used with a 1/2- or 3/4-hp. air compressor, and a paint pump and portable paint heater. To guide the painter the booklet contains an easy-to-read chart which specifies the correct spray gun to be used with the various classes of paints. *DeVilbiss Co.*

... for your copy circle No. 220

26-page book on how to guard against corrosion

This booklet on the causes and control of corrosion explains the seven types of corrosion and suggests methods of surface treatment to give maximum corrosion control. Product information is included on seven industrial coatings which help guard against corrosion. A chart shows the degree of protection offered by Vibradamp industrial coatings against 81 corrosive agents. Sections discuss primers, when and how they should be used, and how to finish various types of industrial insulation. *Vibradamp Corp.*

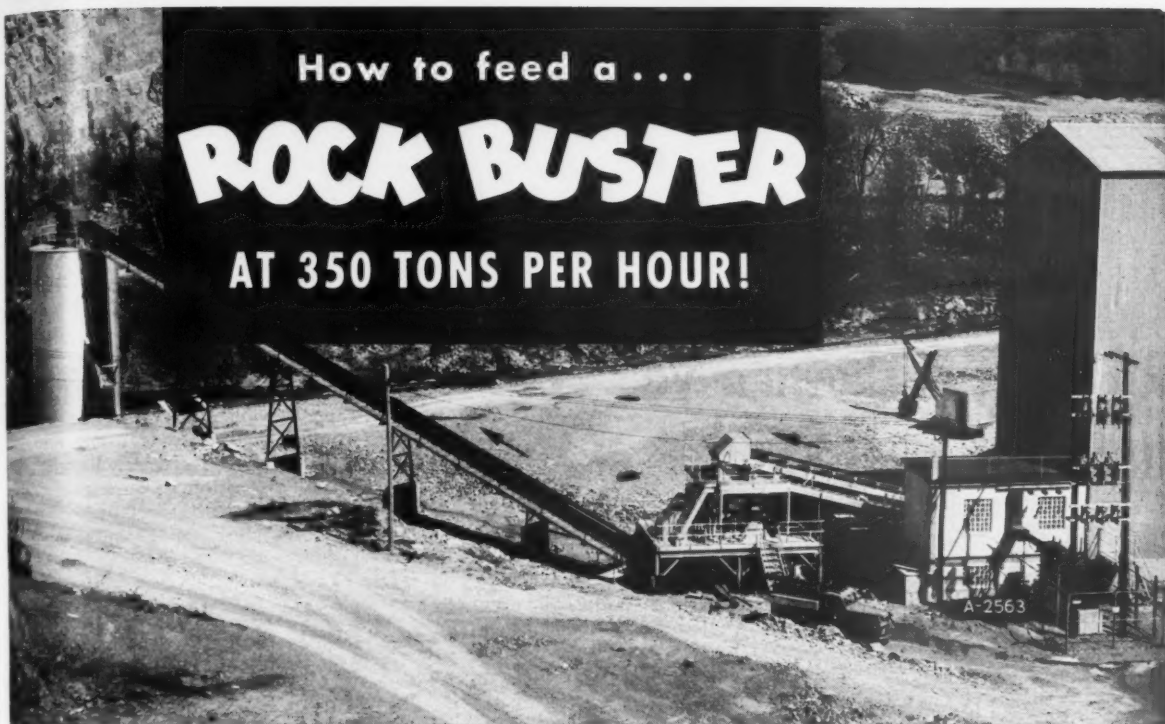
... for your copy circle No. 221

Information on skidproof coating for floors

Sono-Grip is a skidproof coating for plant floors which will give a nonslip finish to wood and concrete, steel treads, and metal decks. Resistant to gasoline, alcohol, oil, grease, and many types of acid, it can be used to resurface worn steel matting as well as floors and provides nonslip protection whether the surface is dry, wet, or oily. The finish comes in red, green, yellow, and gray. *L. Sonneborn Sons, Inc.*

... for your copy circle No. 222

How to feed a . . . **ROCK BUSTER** AT 350 TONS PER HOUR!



HARBISON-WALKER PLANT, BARABOO, WIS.

STEPHENS-ADAMSON CONVEYOR SYSTEM GETS A RUGGED TEST WITH GANISTER ROCK

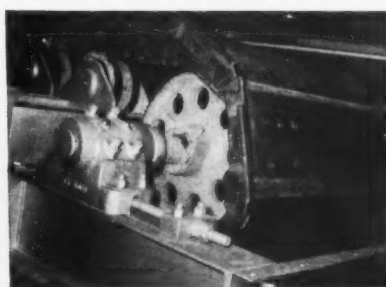
Ganister rock is one of the toughest, most abrasive materials a conveying system can be exposed to. Processed into refractory brick by the Harbison-Walker Refractories Company, it is shown here being quarried at Baraboo, Wisconsin. This Stephens-Adamson installation takes continuous brutal punishment yet delivers steady, economical service with minimum maintenance.

An S-A Amsco manganese steel pan feeder supplying a primary crusher absorbs the jarring impact delivered by thousands of tons of rock ranging in size from 18 inches to 30 inches. Belt conveyors carry sharp, jagged lumps.

Designing heavy duty conveyor equipment that can take it and dish it out is nothing new for S-A engineers. Their tremendous experience plus a full line of S-A conveyor products can always be counted on to provide the most economical method of bulk material movement.



Head end of picking belt. Long center rollers distribute load.



Amsco manganese steel feeder actually toughens with usage.



48 inch belt conveyor runs under complete length of manganese steel feeder.

Designers and manufacturers of conveyors, elevators, screens, and transmission equipment.



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Designers and manufacturers of all types of bulk materials conveying systems.

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A complete line of conveyor accessories—centrifugal loaders—car pullers—bin level controls, etc.

SEALMASTER DIVISION

A full line of industrial ball bearing units available in both standard and special housings.

... for more details, circle No. 50 on Reader Service Postcard

New approaches to floor care

... can pay dividends in safety, appearance, and production
says this panel of 3 experts discussing latest equipment and methods.

Research is showing you how to use right waxes and cleaners



By
J. PAUL GLENN
Western
Sales Manager
Walter G. Legge
Co., Inc.

NOT ONE, but a number of contributing factors have been responsible for the notable advance in scientific floor care techniques during recent years. Acuteness of the problem was pointed up during the succession of industrial expansion periods in the West. So crucial was the need for cutting down accidents, preventing excessive wear, and improving the physical appearance of floors that extensive research was initiated that has now gone far in solving problems of appearance, accidents, effects on production, and economy factors. And it is now recognized as a simple, practical fact that floors must be considered as vital items of industrial equipment.

The blame for malpractices?

It is difficult to fix the blame on individuals for the malpractices in floor care which occurred years ago and, in numerous cases still occur. Most maintenance men are conscientious about their duties. Management, with its many other problems, can scarcely be held accountable. Properly, the onus belongs on faulty education on the subject.

Take the case of Company A. Heavy tracked mud and spilled water ground dirt and grime into the floors daily. The maintenance superintendent selected the harshest of cleaners solely

on its ability to eat off the dirt. It seemed plausible enough until the cleaning crews began coming down with skin infections. This resulted in lost time as well as the expense of medical care. At the same time the floors began to show signs of irreparable damage.

Some superintendents were, in the vernacular of the trade, "pushovers" for every silver-tongued salesman who came along. Naturally, this led to over-storing and, in many cases, duplication. Containers lay around in supply rooms so long their labels fell off. Throwing them away meant a total loss on an investment. Yet this would have proven far less costly than mistakenly using an unlabeled material on the wrong type of floor.

How to choose products

Of primary importance in the training of maintenance crews is the need to educate them on the use of the proper product for the proper type of flooring. In some cases floors may be quickly ruined. In others, the labor involved is utterly wasteful. In polishing, for example, crews should be taught never to use spirit-base products on rubber or asphalt tile floors, since these surfaces cause the material to dissolve.

In the training of floor maintenance specialists at Walter G. Legge Co., manufacturer of slip-resistant polishes and cleaners, the first principle taught is, "Accidents don't happen—they are caused." How true this is can be seen from an examination of the reasons behind falls. As a person walks, two factors prevent him from either losing his balance or doing a "split"—his brain which controls the muscles of the legs, and friction. And friction in walking can exert no stronger a force than the slip-resistance of the walking surface.

On a slippery floor, the influence of friction is minimized. Loss of balance happens so swiftly that the brain has insufficient time to transmit danger signals to the muscles. Result? A steady procession of slips and falls, sometimes severe enough to cause fractures and even permanent disabilities.

One wholly unsatisfactory safeguard against such slips is holding forward movement to a snail's pace. This means taking small, mincing steps of not more than two to three units at a time, a ridiculous thought. It is worth noting here that Underwriters' Laboratories, before approving a polish as "slip-resistant" requires that it permit a safe walking zone of five units per step. (Some polishes increase this zone to 7.5 units.)

While high gloss waxes are a major cause of falls, they are by no means the only ones. Sometimes polishes and cleaners which may be quite safe when properly applied, are used incorrectly or on floors for which they were not designed. Such errors might intensify slipperiness. Heavy accumulations of dust and loose litter also cause floors to be slippery. And some accidents take place during cleaning or polishing, while floors are wet, because a careless workman has neglected to put up a sign or otherwise inform personnel.

Many falls result from tripping, as well as slipping—over mops extending into walking areas while not in use, cleaning equipment sprawling in corridors during temporary absence of the workman, electric cables running crazily about a corridor, and as a result of horseplay among personnel. All these factors contribute to a high rate of accidents. The remedy in each case is quite obvious: *Care*.

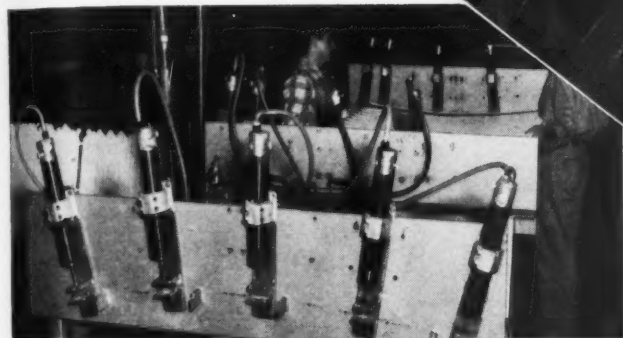
A checklist of best rules

To sum up, the following rules for protection of floors and personnel should be observed:

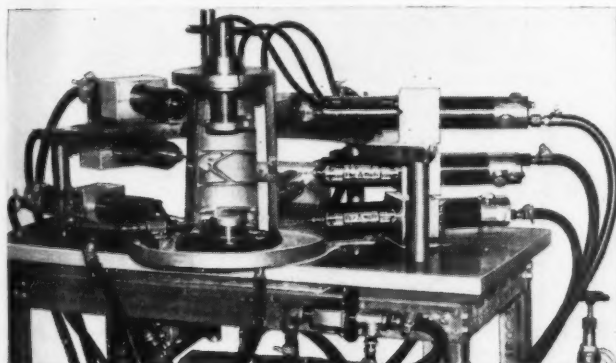
- Replace badly worn, eroded floors.

Save on Holes!

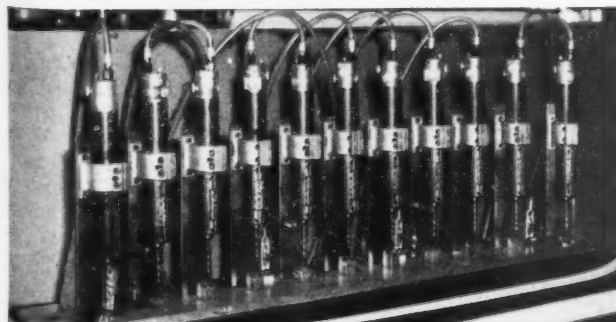
ONLY \$17500



ARO Par-A-matics drill 3/16" and 5/32" holes in sub-assemblies of aluminum awnings.



Eight holes are drilled in a cast aluminum sanding drum in 4 to 5 seconds with ARO Par-A-matics.



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SWITCH TO **ARO** **PAR-A-MATIC** **DRILLING UNITS**

LOW INVESTMENT . . . You can drill any number of holes simultaneously, at *extremely low cost*, with ARO Par-A-matic Drilling Units!

LOW MAINTENANCE . . . Par-A-matics are air-operated . . . simple to set up and maintain . . . precision-made . . . performance proved.

LOW CENTER-TO-CENTER DISTANCE . . . compact design permits use where space is a factor.

FLEXIBILITY OF SET UP . . . Adjustments are quick and simple. Adjustable stroke length . . . variable rate of feed. ARO Field Engineers offer full assistance in planning multiple Par-A-matic installations. Write for bulletin 5546-T.

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Aro of California, 4131 S. Grand Ave., Los Angeles 7
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ARO [®] **AIR TOOLS**
Also . . . Air Hoists . . . Lubricating Equipment
. . . Aircraft Products . . . Grease Fittings . . .

. . . for more details, circle No. 51 on Reader Service Postcard

- Clear your supply room of ancient, unlabeled materials.
- Don't buy cleaners and polishes on a basis of price alone. Cheap ones cost more in the long run. Your casualty insurance company will be glad to make recommendations.
- Floors must do more than glisten like a second Lieutenant's bars in order to make a good impression. They must provide safe footing, too. By all means, strive for cleanliness and luster, but place prime emphasis on

- slip-resistance.
- Avoid the idea that "what was good enough in the old days is good enough today." Improved products are now on the market. There may not have been such a thing as slip-resistant polishes in what you consider the "old days."
- Know your floors. Learn what types of cleaning and polishing compounds are suitable for terrazzo, for asphalt tile, for linoleum, for wood, for magnesite, etc. Make sure your cleaning

crews understand, too. There are organizations which send experts to make free, on-the-spot surveys of your floors. They tell your crews what products to use and how to use them. Ask such an expert to call on you.

- Instruct your crews to warn personnel while cleaning is taking place by posting signs or other means.
- Keep walkways clear. Be sure crews keep equipment not in use well out of the way of traffic.

You will be surprised how quickly the accent on safety will pay dividends in appearance, production, and economy as well.

Serving the Leaders in Metalworking...

FORGINGS

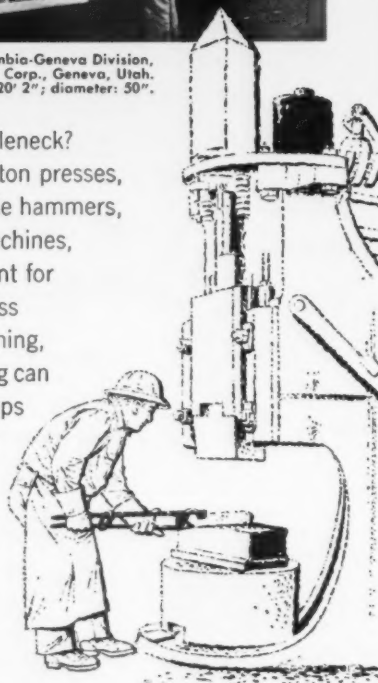
by Moore Dry Dock



Slab mill eccentric shaft for Columbia-Geneva Division, U. S. Steel Corp., Geneva, Utah. Weight: 42 tons; length: 20' 2"; diameter: 50".

Forging production your bottleneck? Moore's 1,500 ton and 750 ton presses, 800-6,000 lb. capacity flat die hammers, power hacksaws, burning machines, cranes, and special equipment for sandblasting, annealing, stress relieving, normalizing, quenching, tempering, and tool hardening can speed your production, perhaps improve your product, lower your cost. Let us estimate your next outside job.

- ★ Superior shop equipment with a wide range of work capacities.
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- ★ Custom forging . . . irregular shapes.
- ★ Prompt service.



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... for more details, circle No. 52 on Reader Service Postcard

Prevent needless damage to your concrete floors



By **STANFORD R. HORN**

General Manager
Pacific Coast Division
A. C. Horn Co., Inc.
Subsidiary,
Sun Chemical Corp.

DAMAGE to your concrete floors can rob you of production time, reduce work efficiency, create employee accidents, or cause damage to merchandise. Preventing needless destruction of concrete floors is therefore essential if you want to keep your annual maintenance costs low. Where your floors have already been damaged, you will want to repair them as quickly and economically as possible with surfaces that will not give trouble again soon.

Selection of a floor hardener to meet your needs depends upon the particular destructive forces that must be resisted, the urgency of repair, and the cost of maintenance. If you can single out the different kinds of destructive agents in different areas, then you will be in a position to select the right floor hardener to meet the requirements of each area in your plant. Here are ideas on selection:

Abrasion . . .

For a loading dock, a heavy repair shop or similar area where the

R B & W FASTENERS -

Strong Point of any assembly



Going to extremes to satisfy every need in fasteners

WHAT's the size-limit on nuts? Pretty high at RB&W, as you can see from the 4" giants above. At the other extreme, RB&W produces nuts down to 1/8". Everything in between, too.

Most are made on automatic nut formers. Big stuff gets milled from hex bars, and needs more personal attention. Frank Culko, long on skill and precision, is shown keeping his expert eye on the operation. Like so many other RB&W craftsmen, he's been with the company for well over 20 years.

There's plenty of production skill and experience, plenty of facilities behind the avalanche of nuts flowing from RB&W. In fact, it was RB&W that de-

veloped the first cold-punched-nut machine, the first continuous automatic nut tapper, and pioneered the cold forming process. Also a fact: RB&W recently invested millions of dollars in bolt and nut making equipment to expand capacity.

RB&W goes all out on quality control, too... with a program recognized as the finest of its kind.

What does all this mean to you? More quality for your money. A truly reliable source of supply. Strong fasteners that never let you down. Russell, Burdsall & Ward Bolt and Nut Co., P. O. Box 3336 —Terminal Annex, Los Angeles 54, Cal.

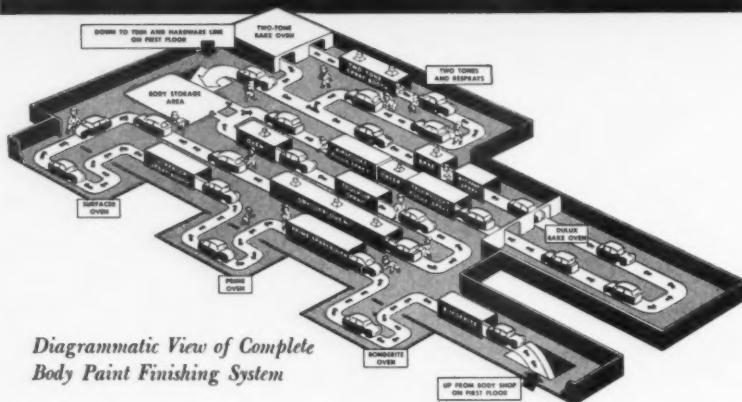


Plants at: Los Angeles, Calif.; Port Chester, N. Y.; Coraopolis, Pa.; Rock Falls, Ill.; **Additional sales offices at:** San Francisco; Dallas; Ardmore (Phila.), Pa.; Pittsburgh; Detroit; Chicago. **Sales agents at:** Seattle; Denver; Milwaukee; New Orleans. **Distributors** from coast to coast.

... for more details, circle No. 53 on Reader Service Postcard



ROSS *Complete* PAINT FINISHING



- Complete Coordination Of All Components
- Each Unit Balanced For Proper Performance

These processing advantages are assured because all major units in the finishing line are designed, built and installed by ROSS. This means that through each step—washing, bonderizing, spraying, flow-coating, drying and baking—maximum uniformity with required production speed is consistently maintained. Write for complete information.

J. O. ROSS ENGINEERING CORPORATION

Main Office: 444 MADISON AVE., NEW YORK 22, N. Y.

West Coast Offices Located At

6417 BANDINI BLVD., LOS ANGELES, CAL.

823 SKINNER BLDG., SEATTLE, WASH.

... for more details, circle No. 54 on Reader Service Postcard

dragging or sliding of heavy crates or equipment is common, select a floor hardener that will resist the abrasive, scratching action of the material being moved.

Moisture . . .

If your concrete floor is in an area that is subject to acids, oil, grease, water, or solvents, then select a floor hardener that will minimize liquid penetration, and thus resist the destructive action of these liquids on the basic structure of the concrete.

Rolling loads . . .

If the floor is in a materials handling area or along aisles where there are heavy rolling loads as lift trucks or dollies with steel wheels then select a floor hardener that will resist the heavy concentrated loads and impact that cause depressions and ruts to wear in the concrete.

Repair time . . .

Selection of a floor hardener will also depend upon the relative importance of down-time in the maintenance and repair of your floors. Some floor hardeners will take care of your more immediate and temporary needs in a hurry, while other hardeners are more suitable for permanent repair or resurfacing jobs.

Quick repair of smaller areas . . .

Floor hardeners are available that are particularly effective for patching the small holes, cracks, and other irregularities in your floor whenever it is impractical or unnecessary to resurface the entire floor area. A. C. Horn Co., for example, a manufacturer of building and maintenance materials, produces a complete line of these hardeners.

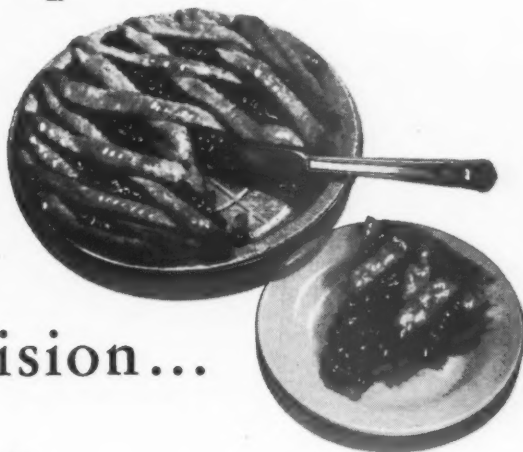
If you are pressed for time, a quick-setting hydraulic cement base floor hardener can be used to patch up a hole so that in a matter of minutes light traffic can be resumed over the patched area. After forty-eight hours an area that has been patched with an asphalt or rubber base floor hardener can stand up and absorb the shock of heavy rolling trucks.

There are numerous floor hardener and patching products now available to you that are designed especially for many different types of floor traffic and for concrete floors exhibiting various degrees of damage and wear. For example, there are hardeners that set within 45 min. to allow light

do you solve your distribution problems by



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division...

or simplification?

As your business has increased, have you multiplied the forms of transportation employed to handle your expanding distribution? Or, from expediency, have you divided it up among a number of carriers? If you have, there is a simpler...more efficient way to solve your shipping problem. Call CF!

In a day when mass distribution is as necessary to success as mass production, CF offers

you a complete distribution-type service. *Serving more points direct than any other carrier in the west*, CF gives you one-carrier convenience...one-carrier responsibility, from your shipping dock to jobber or dealer door.

Whether you are shipping LTL* or full load, one shipment or many, CF's purpose is to give you the *direct*...sure...economical distribution you need.

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Terminals in 49 other key cities from the Pacific Coast to the Great Lakes...Thru service to all major eastern cities.

• • • Foster Freight Lines, a subsidiary of CF serving Indianapolis, St. Louis, Louisville, Cincinnati, Dayton.

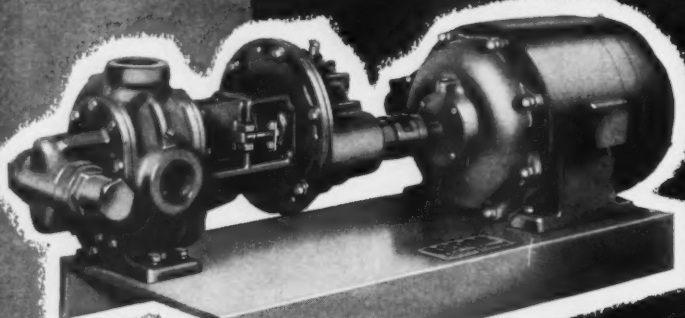
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**QUALIFIES
FOR THE JOB
ON MANY
COUNTS**

ROPER

SERIES 3600

PUMP



If you have a job open for a pump, then by all means consider the Roper Series 3600 as the heart of your fuel transfer system. Designed to handle thin or thick liquids quickly and safely, these pumps offer you the many advantages of the rotary gear principle, plus a most important benefit — Roper *dependability*. There is a size for your needs, as models are available from 40 to 300 G.P.M. sizes — pressures to 60 P.S.I.

Check AND COMPARE THESE FEATURES

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| <input checked="" type="checkbox"/> Compact . . . requires minimum of installation space. | <input checked="" type="checkbox"/> Steel Bed Plate provides rigid foundation for pump and motor. |
| <input checked="" type="checkbox"/> Indoors or Outdoors . . . no pump house needed. | <input checked="" type="checkbox"/> Operation . . . unusually smooth and quiet; pump operates in either direction. |
| <input checked="" type="checkbox"/> Gear Reduction . . . totally enclosed and running in oil. Three gear ratios available. | <input checked="" type="checkbox"/> Suction Lift . . . up to 15 feet at 60 P.S.I. |
| <input checked="" type="checkbox"/> Anti-Friction bearings throughout gear reduction. | <input checked="" type="checkbox"/> Helical Gears . . . run in axial hydraulic balance. Pump fitted with 4 high-lead bronze bearings; split-type gland. |

See Your Roper Distributor or Write for Catalog

GEO. D. ROPER CORPORATION
PACIFIC COAST OFFICE, PUMP DIVISION
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ROPER

Rotary Pumps

... for more details, circle No. 56 on Reader Service Postcard

traffic over patched areas; a ready-made pre-mixed hardener that is easy to apply and cuts down the noise of rolling truck loads; tough and resilient hardeners that assure excellent resistance to impact; and others that are non-slip, dustless, and spark-resistant under the heaviest traffic. Both metallic and non-metallic hardeners that resist severe punishment (even the dragging and sliding of heavy castings) are available for repair and resurfacing of entire floor areas. Metallic types actually give the concrete a toughness akin to case-hardened steel, with dusting of the concrete practically eliminated. Most of the new hardeners are designed to resist water and chemical penetration and thus eliminate floor disintegration from this cause.

If you're not using the latest types of hardeners to keep your floors in top operating condition, it's time you looked into the possibilities.

Do you know how much maintenance is costing you?



By
WILLIAM B. EMMAL
Asst. Gen. Mgr.,
American Building
Maintenance Co.

A FACTORY MANAGER in his efforts to achieve higher production efficiency many times overlooks an important opportunity to eliminate costs that are not always apparent to him. That is in the field of maintenance, and the costs of janitorial service.

It's becoming a science

The day has long passed when you can give a janitor a broom and mop and put him to work. Today's plant housekeeping man must know his equipment, how to use his supplies properly, and most of all, he must understand the theory of systematic building maintenance. Aside from the public relations standpoint of good housekeeping, the equally important

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electric
fork
trucks?*

**BAKER
"FT"**



Here's welcome news for the material handling field—an *all new* line of battery-powered fork trucks engineered to *today's standards to meet today's needs*—the first such contribution made by a major manufacturer in over a decade!

The new Baker "FT" now combines in one machine all the latest improvements in truck engineering and design to produce an electric truck that is easier and safer to operate, more dependable in performance. It has less "overhang", less "dead weight", greater stability, shorter turning radius, more forward tilt and lower silhouette.

Make sure you know all these new features before you buy your next electric fork truck. Write for complete information.

Baker®

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THE BAKER-RAULANG COMPANY

1290 WEST 80th STREET • CLEVELAND 2, OHIO

A subsidiary of Otis Elevator Company

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June 1956 — WESTERN INDUSTRY

87

factors of safety, property value, and economy all point to the need for an intelligent approach to systematic building and floor maintenance.

Perhaps the best suggestion for you as a factory manager about to plan an effective program would be: "Go back to the fundamentals." Determine what you want to accomplish, what degree of housekeeping efficiency your plant requires, and the budget that should be allotted to the maintenance department for this purpose.

Each area and feature of your plant should be studied in respect to maintenance needs—office area, pro-

duction plant, lighting facilities, glass areas, parking areas, and grounds. In setting up a systematic maintenance program—which can save you more money than it costs—there are important questions which you must answer concerning the care of each area.

Take your plant area as an example. To systematize your program, here are typical questions that require thorough answers: How much floor space is involved? What type of floor, and do you have any special problem in its care? Can it be cleaned once a day, or must it be scheduled

for continuous cleaning? Are there hazardous materials such as grease and oil that must be removed, and are there any fire hazards? How many pieces of equipment are in the area, and what is expected of your maintenance crew in cleaning equipment areas? Are there disposal bins for scrap materials, how often must these be emptied, and where is material disposed of? What about high dusting, wall washing, and any dust and foreign material problems that might affect your plant employees' health if not properly controlled? Are you complying with all sanitation laws? What is the most advantageous time to schedule cleaning operations, and how many people are needed to maintain this area properly? Will all of their time be productive?

Another example is in the cleaning of exterior glass. To schedule your cleaning to fit best your housekeeping requirements, have you determined what special equipment will do the job best, and whether you are complying with all safety regulations?

Set up proper controls

Once you have completely surveyed these fundamental questions, you can then determine the actual number of employees needed for this phase of your plant operation, budget the necessary capital investment, and make provision for any special maintenance equipment needed. Set up a budget control program with your accounting department so you'll know at all times what your labor and supplies cost and so you'll have effective equipment and inventory control. When you've gone through these basic planning steps, then only are you ready to put into operation a systematic and efficient plant housekeeping program.

It may be that the economics of your operation will indicate that contract maintenance will work best for you—it's worth looking into. This is a highly specialized field, employing experienced supervisory techniques and with such contractors constantly improving their job standards for your benefit by on-the-job training programs and experimentation in new cost saving methods.

A proven way to reduce your cleaning cost is to be alert for opportunities to adapt special cleaning functions especially for your plant that are time and money saving. As an example, my firm as a maintenance contractor often develops new methods in coping with peculiarities that arise in plants serviced.



UNRETOUCHED PHOTO

Main lobby at the Lockheed
Aircraft Corporation offices
in Burbank, California.

A Reception Area that Visitors Admire

Like other floors in Lockheed executive and engineering buildings, the specially selected imported cork floors of the main reception lobby in Building 61 are beautifully maintained with Columbia Snug Floor Wax. Used by distinguished guests and executive personnel, these floors must be kept glistening and completely safe despite heavy daily traffic. Columbia Wax was specified by Lockheed after rigid on-the-floor comparative tests.

Your floors will be more beautiful, safer and longer lasting, too, when treated with Columbia waxes. Ask your Columbia representative to show you the Columbia product designed for greatest satisfaction and protection on the type of floors you use. There's a Columbia wax for every type floor.

Floor care products of quality...carefully made...competitively priced.

Columbia Wax Company

General Offices—530 Riverdale Drive, Glendale 4, California
Oakland Office—600 Sixteenth Street, Oakland 12, California

... for more details, circle No. 58 on Reader Service Postcard

Such specialized cost-cutting cleaning methods developed by American Building Maintenance Co. experts will be described later this year in WESTERN INDUSTRY.



GOLD BROOM WINNER in March (13-man department producing "Spasaver" refrigeration units, headed by Ugo Rostagno) shows off broom proudly.

Gold broom prize for cleanest area

EACH month a full-size gilded broom adorns the area of the department that did the best house-keeping job the month before at Drayer-Hanson's Los Angeles plant. Award of the broom has become a real honor to employees at the plant, but they have a fate to avoid too—the black, tar-dipped broom awarded monthly to the department receiving the poorest monthly grading.

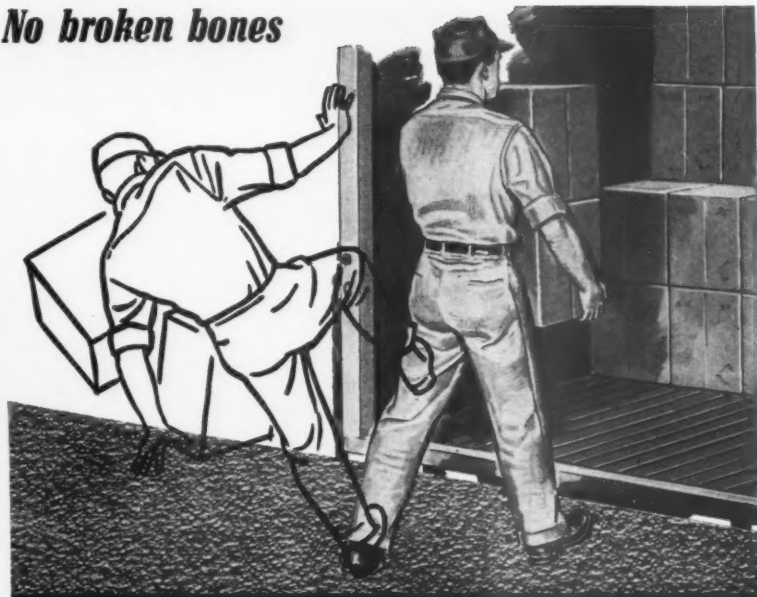
Those departments that win the gold broom three times during a six-month period are given a night-on-the-company. The evening's dinner and entertainment takes place at one of the Los Angeles popular night spots.

Plant manager Fred Savaglio, originator of the idea, states the program has "stimulated worker-teamwork while increasing department competitive spirit, increased plant appearance and safety, and forced department slackards to get on the ball."

The system requires about 16 hr. per month to administer. Lost-time accidents decrease total points gained for the department having the accident. Ratings are determined from points per sq. ft. of department area.

Drayer-Hanson, a division of National U. S. Radiator Corp., manufactures air conditioning and refrigeration products.

No broken bones



The Accident did NOT happen thanks to A.W. ALGRIP World's only abrasive rolled steel floor plate

No slip!

Except in accident and insurance rates!

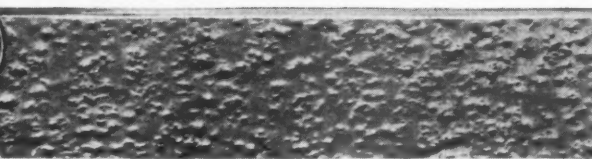
Because neither oil, grease nor water—on flat or inclined surfaces—can reduce the powerful friction grip of ALGRIP's uniformly embedded abrasive particles.

ALGRIP's abrasive is rolled in—not coated—to a controlled depth as an integral part of the steel plate. Wear and tear merely expose more abrasive. ALGRIP, made by a patented process, fabricates easily—maintenance is practically nil.

Make a test installation in your worst slipping area. Watch accident rates go down.

A.W. ALGRIP

ABRASIVE ROLLED STEEL FLOOR PLATE



ALGRIP—approved for safety by Underwriters' Laboratories.

ALAN WOOD STEEL COMPANY
Conshohocken, Pa.

Please send A.W. Algrip Booklet AL-34

Name

Title

Company

Address

City Zone State



Other products: A.W. SUPER-DIAMOND Rolled Steel Floor Plate—Plates—Sheets—Strip—(Alloy and Special Grades)

... for more details, circle No. 59 on Reader Service Postcard



WHEREVER STEAM IS NEEDED up to 250 psi., today's package boiler will fill the bill. Shown here is a typical production application of two Cleaver-Brooks compression distillation units with rated capacity of 50,400 gal. per day used by Arrowhead and Puritas Waters in the processing of distilled drinking water in Los Angeles.

Today's package boilers

Here's how and why to use them and important data on keeping them corrosion and scale-free in all types of plants.

FOR PLANT POWER, the package boiler has won rapidly increasing acceptance in manufacturing and processing operations. Capable of being fueled by oil or gas, if combination fueling is built in, it is particularly applicable to Western plant operations in view of the varied locations and seasonal economics of each. A switch

from one to the other involves only the turn-on of one valve and the turn-off of another.

(For example, one Northwestern plant recently installed a new boiler and employed enough look-ahead thinking to equip the unit with two modes of firing so that, when natural gas pipe work is completed in the near

future, it will be possible to switch from one to the other as economical operations dictate.—Ed.)

Here's data on their advantages, how they are being used, and how to maintain them.

Package boilers are complete units consisting of a boiler, burner, mechanical draft fan, controls, gages, etc., built and/or assembled and sold as a unit by a single manufacturer. They are made in sizes ranging from 15 to 600 hp. and for working pressures ranging from 15 to 250 psi. In recent years, package boilers of the water-tube type have become available in even larger sizes and higher pressures.

Transportation is the size-limiting factor of this type of boiler. Since it is shipped as a complete unit, ready to be skidded into place and connected to its services, it must be of such size that it can be loaded on a standard flat car and pass through all tunnels, bridges, and other railroad structures.

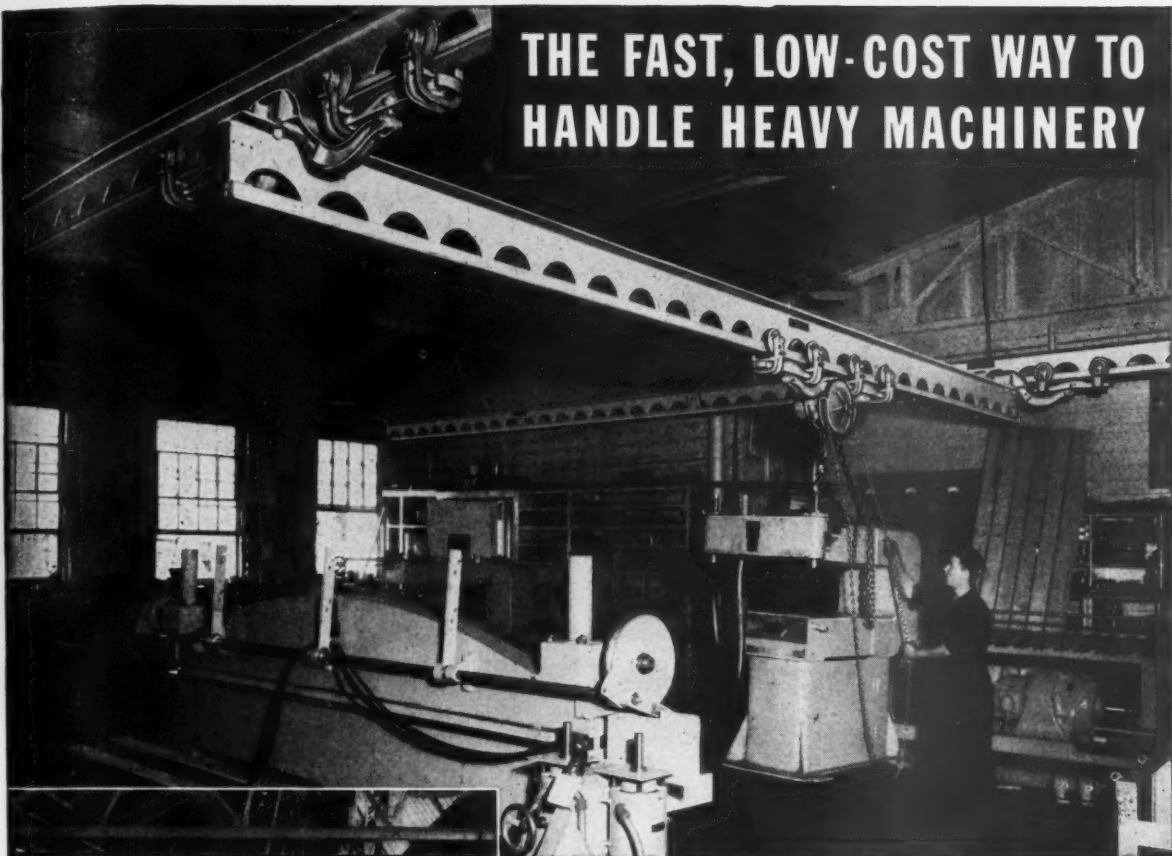
AUTHOR OF THIS ARTICLE



REESE D. HANSEN
Consulting Engineer
Long Beach, Calif.

Due to the increasing importance of package boilers to Western plants, **WESTERN INDUSTRY** asked Reese Hansen, consultant who has engineered many installations of the units, to provide for readers up-to-date info on how the units should be used and what they will do.

THE FAST, LOW-COST WAY TO HANDLE HEAVY MACHINERY



Hand-propelled crane with chain hoist handling heavy steel frame for veneer machine.



Hand-propelled crane with electric push-button operated hoist moving a diesel engine.

IF HARD back-breaking work is required on the part of several men to move a machine in your plant, you should seriously consider Cleveland Tramrail cranes. A heavy engine or machine-tool can be quickly and safely moved by one or two men with a smooth running Cleveland Tramrail crane. Shipping boxes or crates are easily packed. Work that requires *hours* can often be done in *minutes* with an overhead crane.

Despite the great advantages Cranes provide, they are low in price. In fact, many completely pay for themselves in only a few months time. Cleveland Tramrail cranes are built in various types for manual and electric operation.



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**Proof that LEGGE
Floor Maintenance**

**SAVES you money
PREVENTS slip-accidents
PROTECTS your floors**

A famous institution spent \$60,000 yearly to care for its floors. LEGGE Maintenance lowered the figure by 32%. A \$19,000 saving.

A museum's floors kept their original application of LEGGE Polish for 6 months without stripping. Previously this was a once a week job. A 26 to 1 saving in labor plus big savings on materials.

An office building's floors were ready for scrapping. LEGGE Maintenance added 10 years to their existence.

A hospital reported 283 slip-falls in 3½ years. LEGGE cut such accidents to zero.

Why not have a LEGGE Maintenance Specialist examine your floors? No obligation, no charge.

See "Modern Floor Maintenance", informative 16 mm film in color, sound. Our representative will show it at your convenience.



Walter G. LEGGE Company, Inc.

Dept. WI-6, 101 Park Ave., New York 17.
Branch offices in principal cities.
In Los Angeles, 3944 Wilshire Blvd.

- ☐ Send me full information on LEGGE Safety Floor Maintenance.
- ☐ Contact me to arrange a showing of your Maintenance movie. No obligation to me.

Name _____

Firm _____

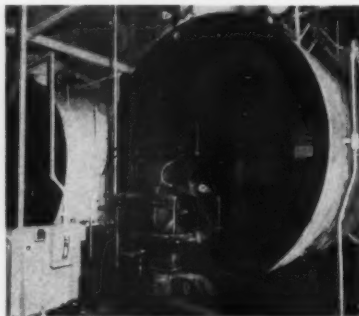
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... for more details, circle No. 61

This type power unit is well adapted to handle fluctuating loads. Fully automatic controls will modulate the boiler output in accordance with the steam demand from full load down to 30% of capacity with an efficiency of 80% or better over the whole range. The package boiler has many advantages over the old type boiler. Among these are:

- It requires less floor area and lower ceiling height for the same out-



OIL AND GAS-FIRED UNITS, such as this one at Sundstrand Machine Tool in Adams County, Colo., are equipped for quick fuel change-over.

put, which is an important item in these days of high building costs.

- It does not require a tall stack to produce adequate draft. Draft is mechanical and the stack need only go through the roof.

- It does not require a special foundation. While it is generally set on some sort of concrete base, it may be set on any level floor of adequate strength.

- Due to the fact that the package boiler is assembled and wired as a unit at the factory there is a minimum of time lost and a minimum of expensive field labor required to put it into service. Most manufacturers will ship even the largest sizes with factory applied insulation. These are items of no small amount at today's wage rates.

- Controls are selected and installed as an integral part of the overall boiler design, with the idea of providing maximum safety and trouble-free operation. Output is controlled over any load range and fuel and water are fed automatically and in quantities required by the power load. For this reason this boiler requires a minimum of supervision and often makes it possible for the plant engineer to take care of other duties.

- All package boilers are approved as complete units by one or more of the following: Underwriters' Laboratories, Factory Mutual, and the Factory Insurance Assoc.

- Since a package boiler is sold as a complete product of one manufacturer, there is a single responsibility regardless of what part or parts give trouble. In the event of trouble, there is no shifting of responsibility between boiler, burner, and control manufacturers.

- Top manufacturers provide a starting service which is included in the boiler purchase price. Under this service, when notified that the boiler is ready to be fired up, the factory will send a service man to the job, who will start the boiler, check all parts, make any adjustments necessary, and instruct the owner's operator in the proper handling and maintenance of the boiler.

Package boilers fit into the picture wherever there is a need for steam up to 250 psi. working pressure, and for units up to 600 hp. They are in use in industries such as aircraft, brewery, concrete block, paint, plastic, rubber, chemical, and food processing as well as in hotels, schools, hospitals, office buildings and laundries.

As the modern automobile engine requires good gasoline for proper operation so does the modern boiler require good water for satisfactory operation. Very few natural waters, if any, are exactly suited for boiler feed water use. Special treatment is necessary to



SCALE DEPOSITS like this increase fuel consumption on boilers at a rate of 15% per 1/16 in. of scale.

maintain the proper water conditions in the boiler. A boiler installed on a heating system or a processing plant where practically all the condensate is returned to the boiler, and where the water is not overly hard, will require very little treatment.

On the opposite end of the scale is a boiler installed on a processing plant where no condensate is returned and the boiler must run with 100% make-

Cutting 4 risers per minute...



Lightweight and easy to handle, this OXWELD powder-cutting blowpipe makes fast work of risers.

Powder-Cutting speeds removal operations 300%

Removing risers from stainless steel castings need no longer be costly and time consuming. Pictured above is a typical powder-cutting operation at the Ohio Steel Foundry Company, Springfield, Ohio. Here, 2 by 4 inch thick stainless steel risers are removed by powder-cutting in only 15 seconds. By methods previously used, this operation took up to four times longer.

In the powder-cutting process metal powder is automatically injected into an oxygen flame to increase the flame's heat and severing action speed. The powder process is helping users gain new efficiency and speed in the re-


moval of gates and risers, sand incrustations, and casting defects.

The powder-cutting blowpipe used in this operation, an OXWELD AC-4, is designed for hand cutting of oxidation resistant metals such as stainless steel, chrome alloys, and cast iron. Heavier apparatus is also available for manual and mechanized operations.

Increase your production and profit—call your local LINDE representative, or write for illustrated literature on LINDE's modern processes. Start saving now, do it today.

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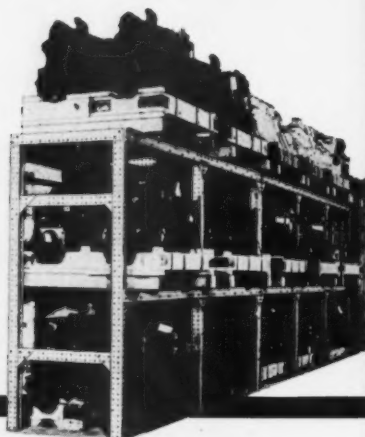
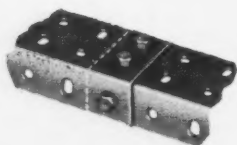
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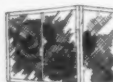
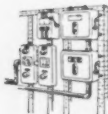
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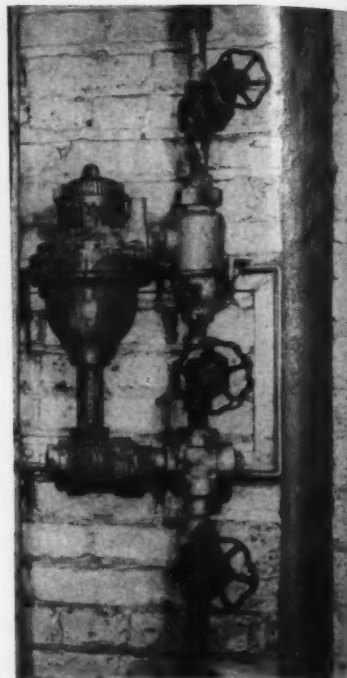
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EFFECTIVE BLOW DOWN SYSTEMS require installation of metering valves with special alloy seats or orifices.

up. If, in addition, the water is of poor quality, the treatment required may be extensive. The two most common results of poor water are scale deposits and internal corrosion.

How to treat feed water

Scale deposits first cause a loss of efficiency. A 1/16 in. thick deposit of scale inside of a boiler will increase the fuel needed by 15%. If scale deposits are allowed to build up, even more fuel is required for the same output, and the point may be reached where the insulating value of the scale is so great that portions of the tubes or of the furnace may be unable to pass heat on to the water. As a result, these parts become so hot that they are weakened, and damage or failure occurs.

Internal corrosion is mainly caused by oxygen driven off by heat from the feed water and by carbon dioxide which is given off when bicarbonates dissolved in the water are broken down by heat. These gases not only cause corrosion in the boiler, but they also pass over into the piping system with the steam, where they cause corrosion in piping and equipment.

The methods of water treatment most commonly used are:

1. Internal treatment with chemicals.

2. Zeolite softening.
3. Hot lime-soda treatment.
4. A combination of any or all of the above types.

Water treatment is not something that can be purchased over the counter. It must be tailored to available water supply and to operating conditions of the plant. Total hardness is no guide. Many waters that are fairly soft, from the standpoint of total hardness, may contain certain elements (silica, for example) that require special treatment to remove.

Water properties vary

There is a wide variation in waters from different localities. For these reasons an analysis of the water supply should be made by a qualified laboratory and a treatment set up to fit the water and plant operating schedule. Periodic checks of boiler water should then be made. If any variation from normal is found, the treatment should be corrected to meet the new condition.

For plants that do not have the equipment or personnel to make such checks, this service is available on a contract basis, at a nominal cost, from many companies who specialize in such work.

(Complete data listing water characteristics in various localities with hardness given in parts per million for every area of the West was carried in a previous issue of WESTERN INDUSTRY and is available in reprint form for \$50. Write to Editor, WESTERN INDUSTRY, 609 Mission St., San Francisco 5, Calif., and we'll be happy to send a copy along.—Ed.)

Continuous blow down is best

An item closely related to water treatment and which is necessary for good boiler operation is proper blow down. In the past, the practice has been for the operator to blow down the boiler one or more times during his shift. This is a hit and miss procedure; results are not uniform and there is a waste of water and fuel.

A certain portion of the boiler water must be wasted in blow down to keep the concentration of solids and impurities, left behind when the water changes into steam from becoming too high. Here again, if the percentage of condensate returned to the boiler is high, the blow down problem is not serious.

However, when little or no condensate is returned to the boiler, serious consideration should be given to the installation of a continuous blow down system. As the name implies,

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with this system blow down is a continuous process. The heart of such a system is a metering valve having special alloy seats or orifices.

Metered amount drawn off

With such a system, a metered quantity of water is drawn from the boiler at a point just below the water line. In the past, it was thought that sludge and other impurities settled to the bottom of the boiler and all blow down was taken from this point. We now know that during normal steaming conditions, the rapid internal circulation of water within the boiler carries suspended solids to the surface and the steam leaving the water causes the highest concentration of dissolved solids in this same area. It is from this area, that the continuous blow down is taken so that a maximum amount of solids and impurities will be removed with a minimum waste of boiler water.

In addition to cutting the amount of blow down to a minimum, a saving of fuel can be made by using the blow down to heat the incoming feed water in a heat exchanger. A further saving can be made with one metering valve.

With the average blow down system, the metering valve discharges to nearly atmospheric pressure and at this point, in the average system, from 10% to 15% of the water flashes to steam. This steam is recondensed in the heat exchanger and goes to waste with the rest of the blow down. The valve mentioned above has a connection through which this flash steam can be drawn off and piped to the condensate receiver, where it is injected directly into the condensate. All the flash steam is recovered as condensate and 100% of its heat is also reclaimed.

Boiler feed pumps help

A boiler feed pump assembly consisting of a pump or pumps and an elevated receiver mounted on a common base and all piped and wired as a unit is a fitting complement to the package boiler. If only one boiler is used and continuity of service is vital, duplex pumps should be installed. With two or more boilers, a pump for each boiler and a valved cross connection arranged so that any pump can feed any boiler usually suffices.

Provisions to heat the feed water in the receiver to 200 deg. F. or better will drive off nearly all entrained gases in the condensate. This serves the dual purpose of driving off the gases that cause internal corrosion and eliminating the shock effect of cold feed water to the boiler.

MICRO precision switches

...THEIR USE IS A PRINCIPLE OF GOOD DESIGN



Switches on valve operator are actuated by Cams "A" and "B" as the valve rotates in either direction.

Explosion-proof switches provide automatic control on valve operator

MICRO SWITCH explosion-proof switches were installed on the gas valve operator by the engineer of a Texas gas company to provide safe and automatic control.

Two switches were placed so that they may be operated by cams as the valve rotates in either direction. The switches control the gas supply and turn on indicating lights when the valve is turned to either extreme position by the pressure of natural gas which it contains. The valve-operator is electrically controlled but is powered by gas.

Double-pole, double-throw switches are used because each switch is required to perform two functions. When the valve reaches either limit,

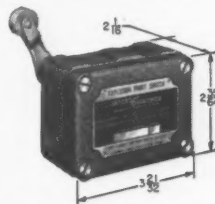
one of the switches is actuated to open or shut off the supply of gas and turn on a light on the control panel, which shows the position of the valve.

Explosion-proof switches are used to insure that no escaping gas will be ignited when electrical contact is made.

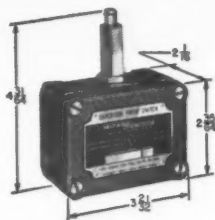
This installation is typical of thousands of such uses, which plant operating men, plant engineers, and maintenance superintendents are making of MICRO precision switches on present plant equipment. Production is increased by making machinery more automatic. Both operators and machines are protected when switches are used to prevent premature operation of equipment.

MICRO SWITCH Explosion-proof Switches (EX Series)

MICRO SWITCH "EX" Series of explosion-proof switches are listed by Underwriters' Laboratories for use in hazardous atmospheres of Class I, Group C (ethyl ether vapor) and Group D (gasoline, petroleum naphtha, alcohols, acetone, lacquer solvent vapors and natural gas); Class II, Group E (metal dust), Group F (carbon black, coal or coke dust), and Group G (grain dust)



This switch, which is shown in action in the gas company installation, is designed for cam or slide operation. The actuator arm is operated by clockwise rotation and is adjustable through 360°. Standard contact arrangement is single-pole, double-throw.



This push-rod plunger switch is designed for use as a limit switch on in-line motion applications. A stop ring near the plunger tip limits the over-travel and permits a steady load of as much as 100 pounds on the plunger without injury to the enclosed precision switch. Standard contact arrangement is single-pole, double-throw.

ELECTRICAL RATINGS

15 amperes 125, 250 or 460 volts a-c;
1/2 ampere 125 volts d-c; 1/4 ampere
250 volts d-c.

Other explosion-proof switches in the MICRO "EX" Series include a cross roller lever switch for use where the operating mechanism approaches from a direction perpendicular to the longitudinal axis of the switch. The switch is also available with a large paddle-shaped actuator for manual control of power equipment.

MICRO SWITCH distributors are located in key cities everywhere. They have full stocks of switches for plant use applications. Look in the Yellow Pages under "Switches, Electric."

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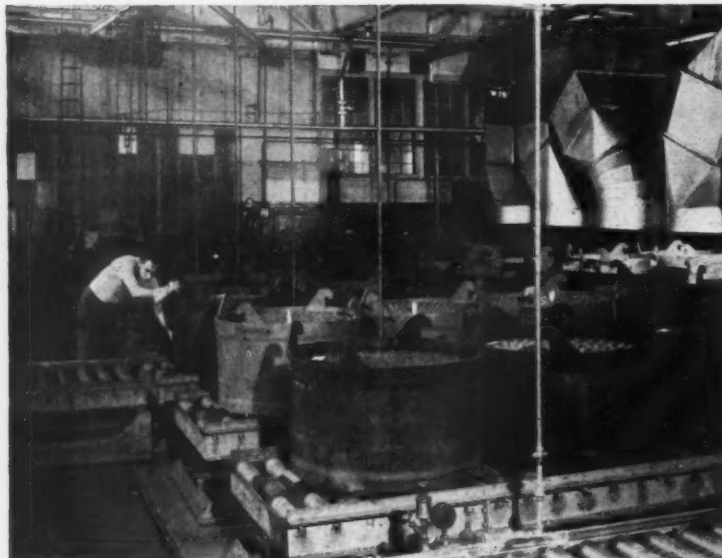
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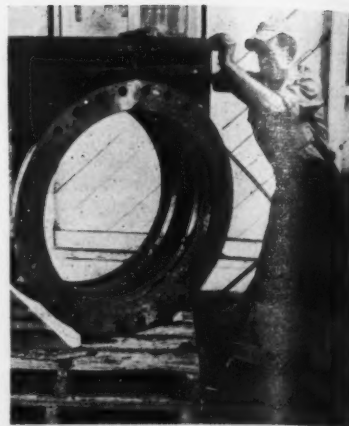
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REPAIRED BY WELDING, this gate valve is typical of results possible with modern maintenance welding.

Needed—90% more repair welding

“INDUSTRY is doing only 10% of the maintenance welding it should do for maximum savings and profits.” This was the statement presented as a challenge to members of the American Welding Society at its spring meeting recently by L. D. Richardson, a field manager for Eutectic Welding Alloys Corp.

An example of a member of industry's 10% referred to by Richardson is the manufacturer of gate valves who recently found it necessary to reclaim and repair some of its equipment for customers. Utilizing latest methods of welding resulted in the following savings on valves that ranged in size from 2 in. in diameter to 30 in.:

1. Labor time was reduced 30 to 35%.
2. Former method of welding resulted in leakers in 75% of the first test batch. By switching to Eutectic's low temperature welding alloys and low heat-input metal joining process, the manufacturer cut rejects due to leakers down to 3%.
3. Switch to more up-to-date welding methods eliminated what the manufacturer termed “welding headaches which cannot be valued in dollars and cents.”

Richardson further stated that the basic requirement for successful maintenance through welding was the adoption of modern processes and materials. When a production welding operation is set up, extensive tests of metal-joining methods are possible. Time study and cost analysis can also be employed.

Because maintenance welding is largely “one-time” work, the welder becomes a key man in plant maintenance.

nance departments. He must have both informational know-how and manipulative skill. Identification of the base metal is his first task. Then he must determine the end use requirements such as strength, machinability, color match of weld deposit and part and other factors such as methods of welding without costly dismantling.



A CHANGE IN LUBRICANT was key to extending clean-up down-time on these precision mold machines by 3,000 hr.

New grease beats mold-slide seizing

A CHANGE in lubricant used on mold machines at Up-right Scaffolds in Berkeley, Calif., has extended the frequency of down-time and costly repairs from a previous 1,000 hr. to 4,000 hr.

The plant uses a precision built, toggle operated mold machine to operate its permanent molds in producing aluminum permanent mold castings. Parts of the machines operate at 400-500 deg. F., and during the preheating of mold base and core mechanisms the slides get even hotter.

Lack of thorough lubrication causes the slides to seize under tremendous pressure, necessitating a costly repair and loss of time. Down-time was scheduled every 1,000 operating hours when a lubricant consisting of molybdenum disulfide mixed in castor oil was being used. During repair periods at this interval the gummy deposit of oxidized castor oil was removed. Further problems were encountered in that the gummy deposit blocked the passage of fresh lubricant.

Now, applying Dow Corning 41 grease once each operating day, the down-time scheduled for cleaning the machines has been extended to every 4,000 hr. with no trouble at all.



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46 pages on steel, aluminum building panels

A complete line of metal building panels for floors, walls, roofs, and ceilings is included in this 46-page book, which is sectioned for easy reference. Descriptions of many different types of panels are included, as well as pictures of many applications. Complete specifications, engineering data, and drawings are given. *Detroit Steel Products Co.*

... for your copy circle No. 223

Leaflet on eight guard rail brackets

This four-page leaflet on highway guard rails pictures and describes eight different types of guard rail brackets including those for wood posts, H-beam posts, steel posts, walls, curbs. Advantages of guard rails are detailed, along with a chart showing flexibility. *Rheem Automotive Co.*

... for your copy circle No. 224

140-page pocket book on welding procedures

A guide to improved torch and metallic arc welding, brazing, and soldering, this 140-page pocket data book discusses simplified welding procedures for every base metal. How-to-weld information is given for fabrication, maintenance repair and salvage, overlaying for wear and corrosion resistance, and welding of dirty, rusted parts. Special welding applications are discussed. Data is also given on methods of gouging, chamfering, and removal of unwanted metal without special equipment. Book gives information on 120 welding rods, electrodes, and welding compounds. (Book TIS 2575) *Eutectic Welding Alloys Corp.*

... for your copy circle No. 225

Your floors and how to maintain them

That is the title of this 40-page digest-sized book, which discusses the importance of proper floor care and the Multi-Clean method. Different types of flooring are discussed, including asphalt tile, concrete, terrazzo and magnesite, rubber tile, wood, and linoleum. Operation and maintenance of floor machines and various attachments are explained. *Multi-Clean Products, Inc.*

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Facts about anchoring machines with Unisorb

Unisorb, a material for simplifying the anchoring of machines to floors and for controlling transmitted vibration and noise, is explained and illustrated in this 24-page pocket-sized booklet, which pictures 12 applications of the material along with comments from various companies that have used it. Highlights from a study of vibration are included, along with illustrations of vibration waves both with and without felt padding. Two load deflector curves conclude the book. *Felters Co.*

... for your copy circle No. 227

Data on temperature controls, indicators

Electric temperature controls, detectors, and indicators are detailed in this 16-page booklet, which explains the principles of operation for indicating controllers, snap-action Thermostatic controls, differential expansion controls and miniaturized controls. Booklet includes many charts giving information on temperature range, material, current ratings, modifications, and prices. (Catalog 500) *Fenwal, Inc.*

... for your copy circle No. 228

Data book on latest industrial lighting

The latest standard specifications for industrial lighting units are contained in the 1956 edition of RLM's specification book. This edition contains important revisions in specifications on both incandescent and fluorescent industrial lighting units, as well as new lighting data. Changes and additions include new coefficient of utilization tables for eight different incandescent and fluorescent lighting units, revised light distribution curves on direct and semi-direct fluorescent units, and the most recent standard specifications for testing and inspection procedure. (Book 31-F-233) *RLM Standards Institute*

... for your copy circle No. 229

20-page information book on lubrication systems

Farval's centralized lubricating systems are the subject of this picture book, which devotes three pages to the manual Dualine system and Dualine measuring valve operation, then thoroughly covers pumps, valves, fittings, and accessories. Two picture spreads show the systems at work, while illustrated charts define the systems' advantages. *Farval Corp.*

... for your copy circle No. 230

Loose-leaf bulletin on industrial dryers

Dryers for drying and curing operations are pictured and discussed in this four-page bulletin, which includes information on source and method of heating and different types of air heaters. A well-illustrated supplement to the bulletin shows typical dryer applications in 11 pictures. (Bulletin 54) *J. O. Ross Engineering Corp.*

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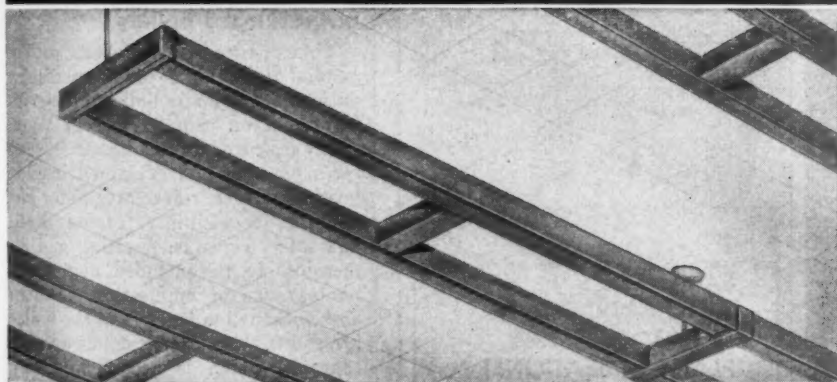
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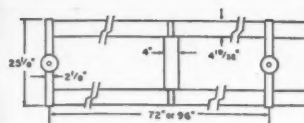
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Complete data on casters, wheels

A four-page booklet covers the full line of Rapistan casters of the steel forged, cold forged, and stamped steel types in classifications from light (150 lb.) to heavy (3,000 lb.) duty, and recommends uses for each one. Eight types of wheels are illustrated and described, along with performance characteristics and industrial applications. (Bulletin CW-56.) A sec-

ond booklet available is the "Rapid Wheeler," a four-page, newspaper-type publication describing new developments in caster use, new designs and modifications in casters, and giving advice on caster specifications for specific uses in industry. "Rapid Wheeler" is a bi-monthly publication and is free of charge. To receive the bulletin and be placed on the mailing list for the "Rapid Wheeler," circle number below. *Rapids-Standard Co.*

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Book presents Coolite heat absorbing glass

A 12-page booklet describes the features of this heat absorbing glass and explains how it absorbs the heat and gives better light. Four pages are devoted to pictures showing Coolite applications. A light-transmission and a temperature chart are included. Also covered are selection factors, installation instructions, and maintenance. (Bulletin 25A-356) *Mississippi Glass Co.*

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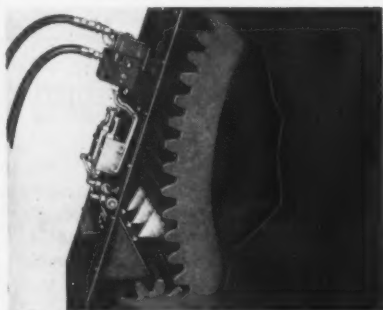
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Farval Spray Panel for economical lubrication of open gearing



• This Farval Spray Valve Panel is designed to spray-lubricate bull gears, girth gears and other spur or herringbone gear trains.

A self-contained panel, mounted on gear housing or framework, sprays lubricant directly to the pressure side of gear teeth. On the panel measuring about 2' x 3', are stainless steel spray valves with built-in nozzles. A central pumping unit delivers lubricant through Dualine measuring valves, to the spray valves which mix it with air to form a penetrating spray.

For description of Farval spray panels, ask for Bulletin 26-R.

FARVAL CENTRALIZED Lubrication Systems

... for more details, circle No. 71

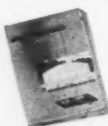
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... for more details, circle No. 72

Specification leaflet on aluminum casement windows

Eighty different aluminum casement windows are illustrated in this five-page leaflet with dimensions given for each along with glass size charts. General specifications, material and construction, protective coating, hardware, and screens are covered in the discussion. Installation data is given for brick veneer, solid brick, and concrete block. Calconizing, which is a process of finishing aluminum casement windows, is explained. (Bulletin 16-E) *Coast Aluminum Co.*

... for your copy circle No. 234

22-page data book on packaged boilers

This picture booklet opens with a general discussion of the Powermaster packaged automatic boiler, giving information on installation, operation, safety features, and maintenance. Features pictured and explained include heating surface, refractory, water circulation, accessibility, forced draft, and safety controls. A rating and dimension chart is included, along with photographs of applications. Design and construction features of the boiler are shown with a large cut-away photograph, which is accompanied by smaller cut-aways in full color of the oil and gas burner. (Bulletin 1225) *Orr & Sembower, Inc.*

... for your copy circle No. 235

Picture leaflet on six dock covers

Two closed bottom and four open bottom dock covers for both exterior and interior mounting are pictured and described in this eight-page leaflet, which explains in detail how to fasten the covers to walls. Booklet also lists special features of the covers, including round corners and slope for water shedding. *Capco.*

... for your copy circle No. 236

Booklet on lighting with mercury vapor

"Better Industrial Lighting with Mercury Vapor" is a 12-page booklet designed to show the plant manager or engineer how to improve industrial lighting and working conditions at lower costs. Summarizing eight basic advantages of mercury vapor lamps in industrial plants, the booklet contains 10 photographs showing typical applications. A section on engineering hints for effective installation is included, along with a discussion of high bay reflectors and ways to meet color requirements. Information on combining mercury vapor lamps with fluorescent or incandescent is included. *Sylvania Electric Products, Inc.*

... for your copy circle No. 237

Picture leaflet on shaft-mounted gearmotors

This four-page two-color leaflet on shaft-mounted gearmotors has several pictures of the complete motors and individual pictures of component parts, including tang shaft, oil seals, gears, and castings. Motors and components are thoroughly explained. (Sec. 4, Catalog 56) *Electra Motors, Inc.*

... for your copy circle No. 238

Data on electric drives for the lumber industry

A six-page folder on electric variable speed drives for the lumber industry and adaptable for variable speed operations pictures and discusses log carriage, planer, edger, and plywood lathe drives. The folder also explains the fingertip control feature of the drives, and includes a selection chart for log carriage drives. *Zidell Machinery & Supply Co.*

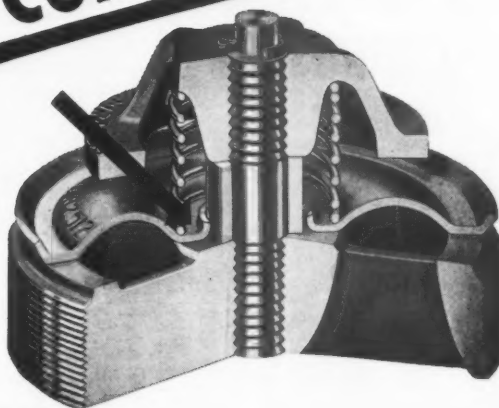
... for your copy circle No. 239

72 pages on self-align roller bearings

Specifications and data on all Shafer self-aligning roller bearings are included in this 73-page catalog. The book also describes the Shafer self-aligning principle of concave rollers running between convex raceway, the microlock adjustment, and seal. Engineering data, load rating tables, exploded views for parts identification are all included. Discussed are pillow blocks, flange units, flange cartridge units, cartridge, duplex, and take-up units, and aircraft bearings. (Catalog 55) *Chain Belt Co.*

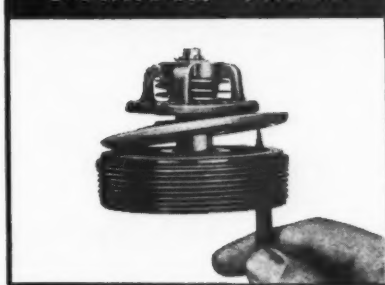
... for your copy circle No. 240

HOW "POINT CONTACT"



opens the way to pump valve efficiency

DURABLE VALVE



Apply pressure to the outside edge of the valve member with a pencil point. Notice how it tilts and opens with a light pressure, without noticeable friction.

ORDINARY VALVE



Now try this with an ordinary valve. If the valve opens at all, it will only open part of the way, and with excessive friction.

All reciprocating pump valves are subjected to flow forces which necessitate tilting of the valve member while opening. In applying pressure through the seat with a pencil point to the outer edge of the valve member you approximate operating action.

In a DURABLE Valve only "point contact" is made by the valve member on the stud or sleeve, so it cannot bind or hang-up on the guard stem, but opens with a tilt-action following the flow line. Other types of valves using wings for seat guiding or high hubs for stem guiding, cannot avoid creating excessive wear and friction, with resultant warpage and possible breakage of valve or stud.

The unique DURABLE Stainless Steel Valve will operate freely under extremes of high or low temperature, with highly corrosive fluids, and in any position. It will handle vacuums of one micron or discharge pressures of thousands of pounds per square inch. Standard equipment on many pumps, it will fit ANY pump, old or new. Ask for bulletin WI-66

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... for more details, circle No. 73 on Reader Service Postcard

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... for more details, circle No. 74

Facts on air cleaning by electrostatic precipitation

A booklet describing the Precipitron electronic air cleaner for industrial applications explains the cleaning of air by electrostatic precipitation and describes the installation, operation, and maintenance of the Precipitron units. Complete with pictures, drawings, and specifications, the book also has a description of the movable nozzle washing and adhesive application which permits these two cycles to be controlled and operated from outside the unit. (Booklet B-1425) Westinghouse Sturtevant Div., Westinghouse Electric Corp.

... for your copy circle No. 241

Non-technical discussion of screw thread system

"Understanding the Unified Screw Thread System" is an 18-page book written by Julian Levanthal, sales manager at Allmetal's West Coast division, explaining in non-technical language features, status, designation, changes, and applications of the unified screw thread system, and its differences from the American National System. Allmetal Screw Products Co., Inc.

... for your copy circle No. 242

Data leaflet on powder-actuated tools

Powder-actuated tools for fastening to concrete or steel are discussed in this eight-page two-color leaflet, which explains the principle of the powder actuated fastening method in driving steel drivepins into steel and concrete. About 55 drivepins are shown in full size illustrations and accompanied with suggested applications. Accessories are illustrated also. Powder Power Tool Co.

... for your copy circle No. 243

Design manual for heat exchangers

A 16-page design manual for Pyrex modular glass shell and tube heat exchangers was prepared to help in the choice of the right module for any particular heat exchange system. Ten engineering drawings illustrate installation of the heat exchanger modules. Engineering data for determining capacity requirements of the 50 sq. ft. and 3 1/2-sq. ft. capacity heat exchanger systems include charts and information on fluid constants, friction losses, surface area calculations, and thermal gradients. (Bulletin PE-33). Corning Glass Works

... for your copy circle No. 244

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... for more details, circle No. 75 on Reader Service Postcard

WESTERN INDUSTRY — June 1956

Specifications for vibrating conveyors

This 36-page booklet opens with a list of special features of the mechanical vibrating conveyor, which is followed with pictures of typical installations. Design features are discussed and illustrated and selection data included. Charts and tables cover conveyability and densities of typical solid materials, curves of good, fair, and poor conveyability, selection of motor size, dimensions, and weights. Procedure for installation is discussed and diagrammed. (Catalog 890) *Jeffrey Manufacturing Co.* . . . for your copy circle No. 245

Picture book on belt conveyors

A large diagram in this eight-page book on sectional belt conveyors illustrates the conveyor in detail, showing all its components and defining them. A selection chart is included, along with illustrations of applications and case-history type discussions in six different fields. (Book 2579) *Link-Belt Co.* . . . for your copy circle No. 246

Report on first annual contour machining meet

This 24-page report contains details about recent developments of tracer-controlled production methods, and will be of interest to men in tooling, production, design, cost, and other functions of the metalcutting industry. The booklet is the outgrowth of the first annual contour machining conference held to discuss improvements in aircraft and instrument fabrication. *True-Trace Corp.*

. . . for your copy circle No. 247

Instrumentation for pulp and paper mills

Instrumentation systems for 24 sections of various types of pulp and paper mills, from cooking liquor preparation to wet-end control, are covered in this 32-page illustrated book. A flow diagram and description of each separate operation is accompanied by photographs of typical control systems installed in various paper mills. Some of the systems engineered by Fischer are described for the first time, among them an automatic semi-continuous calcium bleach system, and a scheme for automatic preparation of soda bleach at the rate the bleach liquor is required. Equipment discussed includes meters, indicators, recorders, totalizers, and controllers. *Fischer & Porter Co.*

. . . for your copy circle No. 248

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Take advantage of our warehouse services. Next time you need chains, sprockets or couplings—Phone ANgelus 9-9435

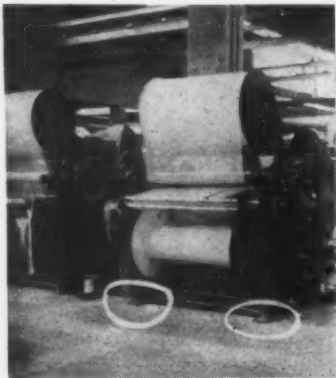


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. . . for more details, circle No. 77

Complete information on solenoid operated valves

Characteristics, flow patterns, and overall dimensions of solenoid operated "Crescent" valves are contained in catalog 5-C, which lists the valves by major service condition: air, four- and three-way, to 150 psi.; and air, light oil, and water, four- and three-way dual pressure, to 150 psi. Additional information on sub-base mounting is included, along with photographs and ordering data. *Barksdale Valves*

. . . for your copy circle No. 249

Silicate insulation for piping, process equipment

"Thermobestos Pipe and Block Insulation" is a 12-page booklet on Johns-Manville's hydrous calcium silicate insulation for hot outdoor piping and process equipment operating at service temperatures up to 1,200 deg. F. Chemical make-up, properties, and characteristics of Thermobestos are discussed, and sections are devoted to prefabrication of fittings, physical and thermal properties, and tables of available sizes and thicknesses. Complete heat transmission tables for both pipe and block insulation are included. (Bulletin IN-169A) *Johns-Manville*

. . . for your copy circle No. 250



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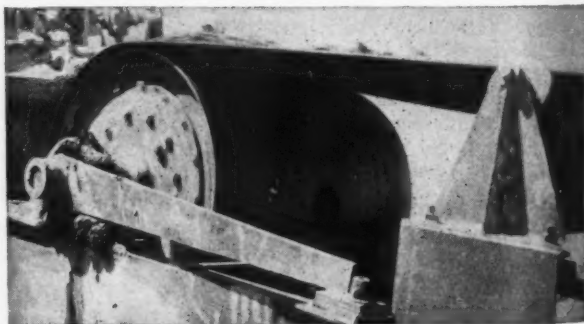
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room than an idler pulley; can be installed quickly. Diameters 10½" to 56". ½ to 125 hp. for voltages to 2300. Job proved. Write TODAY for folder and name of nearest distributor.



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Data on adhesives for honeycomb structures

A 20-page booklet gives engineering data on adhesives for honeycomb structures and includes test procedures and results of testing resin-type and elastomeric adhesives used for bonding aluminum to kraft paper honeycomb core. Honeycomb sandwich materials and construction details are included, along with adhesive application procedures. (Booklet 3M-17) *Adhesives & Coatings Div., Minnesota Mining & Manufacturing Co.* . . . for your copy circle No. 251

12-page brochure on transmission equipment

"If You Are Harnessing Horsepower" is a 12-page brochure on power transmission equipment. Booklet has detailed information on Minder's equipment, which includes more than 7,000 items of power transmission equipment, and the firm's engineering, installation, and maintenance service. *J. W. Minder Chain & Gear Co.*

. . . for your copy circle No. 252

Picture book on disc sanders and grinders

Ten single- and double-disc models of sanders and grinders are pictured and described in this eight-page booklet, along with the adhesive belt grinder, combination abrasive cut-off, and a line of saw sharpening machines. Application data is included, as well as specifications for the various pieces of equipment. *Max Manufacturing Co.* . . . for your copy circle No. 253

Hytrol book on gravity and portable conveyors

Gravity roller and gravity wheel conveyors, and portable, horizontal, and floor-to-floor conveyors are pictured and described in this 12-page booklet. Standard and optional features for each type are listed, along with dimensions. Applications are shown. *Hytrol Conveyor Co.*

. . . for your copy circle No. 254

Picture pamphlet on belting and hose

Belting, hose, and specialties for construction work, rock plants, and mines are detailed in a four-page brochure which treats three grades of conveyor belts and elevator belting, and two grades of transmission belting. Close-ups, as well as application pictures of the belting are shown. Final section is devoted to three grades of industrial fire hose with pictures showing applications. *American Rubber Manufacturing Co.*

. . . for your copy circle No. 255

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NEW EQUIPMENT for Western plant operation, production, and maintenance

USE RIP-OUT POST CARD, page 111, for more information on products described.

SKY CLIMBER

... for swing stage applications



Sky Climber, a unit composed of a bos'n's chair and a length of cable, can be operated by one man by hand, mechanically, or with electrical or air-powered motors. With no limit to height or drop, the Sky Climber is good for rigging scaffolding and for all standard swing stage applications. Chair's lifting capacity of 1,000 lb. may be doubled through the use of fair lead blocks. Climber, with air motor, weighs 48 lb. *Western Gear Corp.*

... for more details, circle No. 256 on postcard

HYDROGEN ANALYZER

... determines hydrogen concentrations

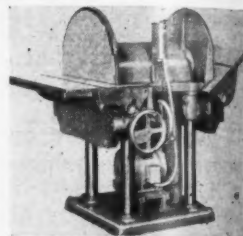
Designed for the continuous analysis, control, and recording of molecular hydrogen, the hydrogen analyzer will detect the presence of hydrogen concentrations in mixtures with air or hydrocarbons. The hydrogen in a mixture of the sample material and air is catalytically oxidized in a thermally isolated reaction chamber in the analyzer; the heat of oxidation produces a temperature differential which is converted to a reading of the hydrogen concentration in the original sample. The analyzer, which works automatically and makes permanent records, is accurate to 1/2% of full scale range without zero drift. *Taller & Cooper, Inc.*

... for more details, circle No. 257 on postcard

SANDERS AND GRINDERS

... with single and double discs

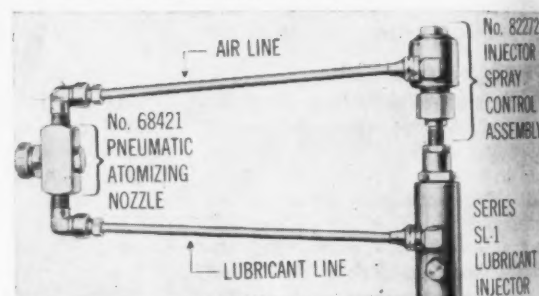
Single and double disc sanders and grinders in sizes of 24, 30, and 36 in. have been added to Max's 16 and 20-in. line. These larger sanders and grinders include two- and four-column models, utilizing the table-on-the-column design. All are suitable for use in the wood, metal, and plastics industries. *Max Manufacturing Co.*



... for more details, circle No. 258 on postcard

MIST LUBRICATION DEVICE

... for oiling open surfaces



MistOMATIC Spray Control is a device for automatically applying a controlled, pre-measured quantity of mist lubrication on open gears, chains, cams, rollers, eccentrics, circular saws, and similar surfaces. According to the manufacturer, MistOMATIC, which was designed for use with Lincoln's centralized lubrication systems, provides a uniform lubrication without waste, eliminates spoilage from drippage of excessive lubricant, and reduces fire hazards. *Lincoln Engineering Co.*

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Vessel with Agitator

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WESTERN INDUSTRY — June 1956



Ask the man who moves mountains

Without him no structure, no road, no dam or development could happen. He whittles the earth into usable shapes with a fine steel blade. He smooths a way for progress.

NEW OILS FOR POWER

All these works are done with power, which we mostly take for granted. But there is nothing *indestructible* about it. On the contrary: the life of your modern diesel engine depends, literally, on very special lubrication! That's why Caterpillar Tractor Company has announced the need for a *new class* of oils—Superior Lubricants, Series 3, for diesel engines. They show

many advantages over the older Series 2 oils which some people still use.

One of the *first* to meet these stiff specifications is Richfield's SUPER Circle C brand of motor oil. It is now recommended for use in a score of Caterpillar engines and noticeably improves the operation of many other makes. It reduces wear, lessens maintenance and parts replacement, keeps the engine cleaner and counteracts the effects of high sulfur fuels found here in the West.

PICK UP YOUR TELEPHONE

Arrange for a trial of Richfield SUPER Circle C Motor Oil. As any man who moves mountains will tell you, it gives *new life* to diesel engines!

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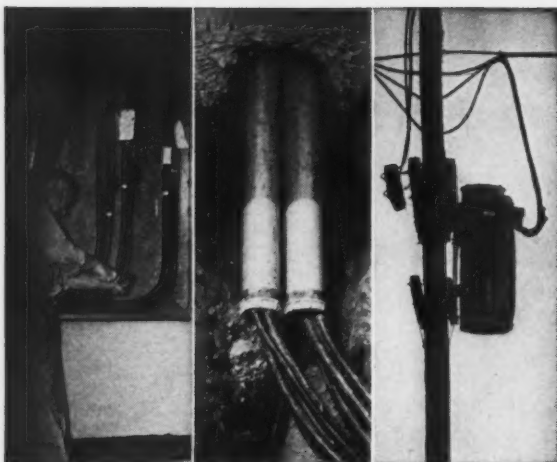
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RICHFIELD

... for more details, circle No. 82 on Reader Service Postcard



ALL-PURPOSE CABLE CUTS COST

ANACONDA's neoprene-jacketed Durasheath* cable cuts installation costs because it can be installed in ducts, buried, aerially or any combination of these—with *minimum splicing*. It reduces maintenance and replacement costs because its rugged jacket resists abrasion, moisture, corrosive chemicals and oils that shorten ordinary cable life. Durasheath is available in all sizes, single or multi-conductor, copper or aluminum, from 600 to 15,000 volts. For full information, call the Man from Anaconda. Anaconda Wire & Cable Company, 25 Broadway, New York 4, New York.

ANACONDA®

*Reg. U. S. Pat. Off.

... for more details, circle No. 83 on Reader Service Postcard

LENGTHWISE GROOVED TUBE

... doubles fluorescent light output



An 8-ft. fluorescent tube with lengthwise dents or grooves along one side gives twice as much light as present tubes of equal length. The greater light output results from an increase in area of the lighted tube surface, the higher wattage at which the new tube can be operated, and the more effective use of energy within the tube. In cross-section at the grooves, the tube, called the Power-Groove, is nearly U-shaped, a design which permits a maximum circumference of the tube while constricting its inside area. *General Electric Co.*

... for more details, circle No. 260 on postcard

ALKALINE MATERIAL

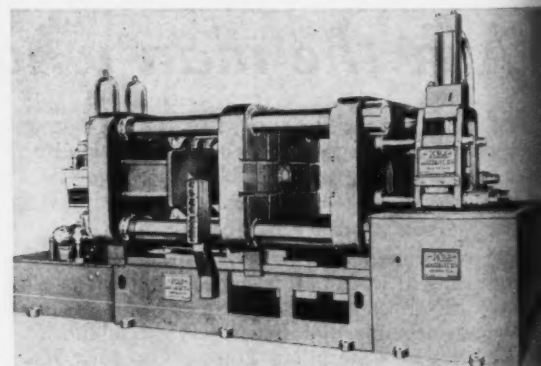
... removes rust, paint, primer

A powdered compound called alkaline rust remover will remove rust, paint, and primer in one dip-and-rinse operation, according to the manufacturer. The compound is said to remove light rust in less than a minute, while heavy rust and multiple paint layers will require only a few minutes immersion. The material, which contains no cyanide compounds, will not affect dimensional tolerances or cause hydrogen embrittlement. *Turco Products, Inc.*

... for more details, circle No. 261 on postcard

DIE CASTING MACHINES

... for producing over-size castings



Two models of these 750- and 1,000-ton die casting machines are available—the hydraulically-operated plunger gooseneck model for production of lead, tin, or zinc castings, and the convertible model having a cold chamber injection mechanism for production of aluminum, brass, or magnesium castings. The two machines, Models BH-38 and BH-60, will produce extremely large castings. The BH-38 has die plates 50 x 50 in. with 30 x 30-in. clearance between stroke; it is adjustable for less stroke. The BH-60 has die plates 82 x 54 in. in size, with 40 x 32-in. clearance between tie bars and 24 in. of die opening stroke; it is also adjustable for less stroke. Both machines are capable of free cycling at a speed of up to eight cycles per min. *Kux Machine Co.*

... for more details, circle No. 262 on postcard



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HEAVY DUTY...**

... A REAL SPACE SAVER

**THE JOY WG-9
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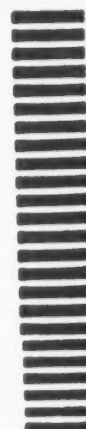
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WHAT'S YOUR PROBLEM TODAY?

Make use of WESTERN INDUSTRY'S special service to readers. These business reply cards save you time, effort and expense in obtaining literature you want and full details on products and services described or advertised in this issue.

In addition, WESTERN INDUSTRY will help you locate sources of information concerning unusual plant operating problems that you may have. Write and describe your problem briefly, to: Editor, WESTERN INDUSTRY, 609 Mission St., San Francisco 5, Calif.



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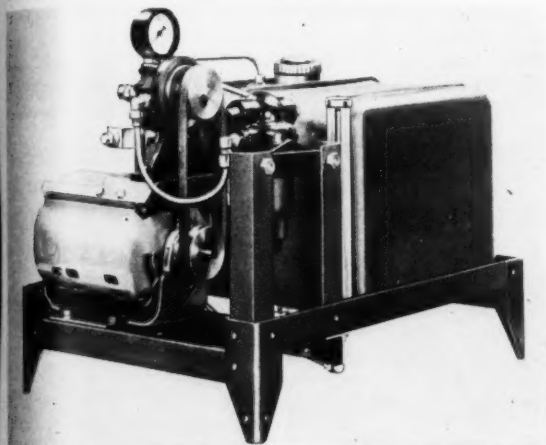
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PUMP-OPERATED DISPENSER ... for constructing oiling systems



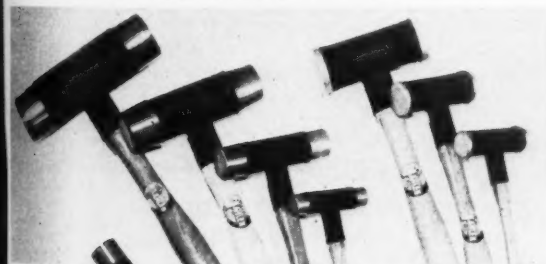
This pump-operated dispenser may be used to construct oiling systems of the gear-pump, constant-pressure or constant-level type. In the gear pump system the gear pump with adjustable by-pass valve for pressure control forces oil from the reservoir into main and branch lines. In the constant-pressure system oil is forced into overhead tank equipped with overflow pipe, while in the constant level system the gear pump feeds oil from the reservoir through sight feed valve into oil pan equipped with overflow pipe. *Oil-Rite Corp.* ... for more details, circle No. 263 on postcard

FLOOR AND DECK PAINT ... has slip-retardant feature

This slip-retardant floor and deck enamel has no metallic agents in it and is, therefore, sparkproof. This anti-slip paint has been field tested for 15 months, according to the manufacturer, and has proved effective where oil, grease, and water cause slippery surfaces. Since it contains a relatively soft anti-slip agent, the paint may be applied by spray or brush. Available in light gray or maroon. *E. I. du Pont de Nemours & Co.*

... for more details, circle No. 264 on postcard

NO-BOUNCE HAMMERS ... have steel grit-loaded heads

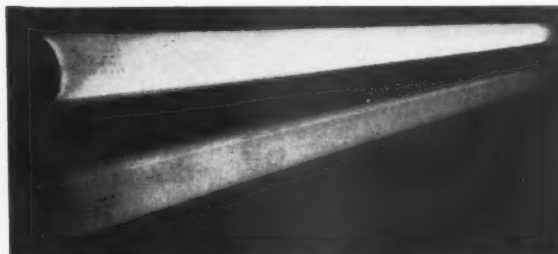


No-bounce hammers, including soft and metal-faced hammers and tappers for production and assembly, sheet metal work, machine shops and construction work, have a tubular head loaded with steel grit, which causes the hammer to "follow through" the stroke instead of bouncing. Soft-faced hammers range in size from 6 oz. to 3 lb. and come with tenite or nylon tips. They can be used for working copper and other soft metals without stretching. Metal-faced hammers, ranging in size from 10 oz. to 3 lb., are recommended for machine shops, tool and die work, and mechanical repairs. Soft-faced tappers are made in

5- and 8-in. lengths and are used in setting up jigs, positioning material in chucks, and making other mechanical adjustments. *Tahlen Hammer Co.*

... for more details, circle No. 265 on postcard

FLUORESCENT LAMP ... with directional light distribution



This fluorescent lamp has an internal reflector surface which produces 70% more downward light than the conventional lamp. It will be particularly useful in installations where dust and dirt are present, as it is relatively unaffected by deposits of light-stealing dust on the top surface of the lamp. Lamp may be mounted bare without external reflectors even where ceilings provide poor reflectance. The directional lamp has an internal reflector coating covering more than half of the lamp's circumference. This provides for a light aperture of less than half of the lamp. Lamps are available in 4- and 8-ft. single-pin types. *Sylvania Electric Products, Inc.*

... for more details, circle No. 266 on postcard

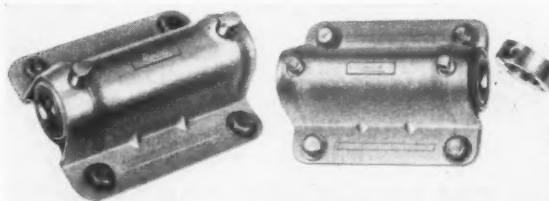
TWO-BOLT CLAMP FITTING ... for heavy-duty applications



Designed for high pressure, heavy-duty applications for hydraulic lines, this two-bolt clamp fitting, called the Dynalok, is made of heavy malleable iron and is secured by two large heat-treated bolts. Engineered for machine tools and heavy duty plant equipment maintenance, the clamp is made in eight sizes to accommodate hose from 1/4 in. to 2 in. in diameter.

A push-on fitting (not shown) for low pressure use on machine tools or for shop air, water, fuel, or lubrication lines is made of brass and comes in 1/4, 3/8, and 1/2-in. sizes. It is designed for use with P54 rubber-covered hose for low pressure uses up to 250 psi. *Flex-O-Tube Div., Meridan Corp.* ... for more details, circle No. 267 on postcard

DUPLEX BEARING ASSEMBLY ... for vertical and horizontal mounting



Two sleeve bearing ball assemblies have been combined in a single rigidized steel housing to make this duplex bearing assembly, which is adaptable to both vertical and

What is your sealing problem?

Chances are, one of Presstite's Permagum sealers will solve it!

Permagum sealers are non-staining, non-drying, permanently soft compounds that *seal tight and stay tight*. Their stability at high temperatures, lack of odor, ability to remain soft and pliable at extremely low temperatures, and effectiveness in sealing out moisture, make them particularly suited for refrigeration sealing. However, they are also widely used in automobiles, railroad cars, trucks, trailers, prefabricated houses, aluminum window frames . . . wherever wind, dust, moisture, must be sealed out.

Available in beads, ribbons, tapes, or special shapes for easy application. Call for complete information today.



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4809 East 49th Street, Los Angeles 58, California. Logan 8-3136
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... for more details, circle No. 85 on Reader Service Postcard

GAR-BRO WHEELS FOR ALL INDUSTRIAL APPLICATIONS



26
TYPES & SIZES

WHEEL TYPES: Drop Center, Lug Base, Disc, Demountable.

WHEEL DIAMETERS: 21", 20", 18", 17", 16", 15", 12", 10", 8", 6".

BEARINGS: Tapered roller, straight roller or ball.
TIRES: Pneumatic or cushion—all standard sizes.

*Available with or without tires.
Write for catalog.*

GAR-BRO WHEEL COMPANY

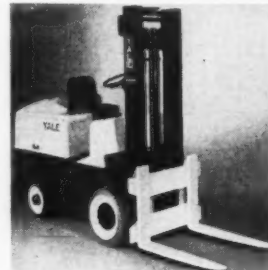
Division of Garlinghouse Bros.
2415 E. Washington Blvd., Los Angeles 21, Calif.

... for more details, circle No. 86 on Reader Service Postcard

horizontal mounting. As adapted for vertical mounting or thrust applications, the Duplex is composed of a graphited flanged bearing with a thrust collar and a regular graphited ball assembly. The unit, which is self-aligning and pre-lubricated, is available in shaft sizes of 3/4 and 1 in. complete. For horizontal mounting the shaft size extends from 1/2 through 1 in. **Randall Graphite Bearings, Inc.**
... for more details, circle No. 268 on postcard

LINE OF FORK TRUCKS

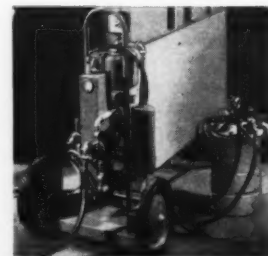
... with automatic transmission



Fully automatic torque converter transmission is a special feature of a new line of standard fork trucks which includes gasoline, LP-gas, diesel, and electric-powered models. Trucks also have self-adjusting brakes, power steering, and high travel and lifting speeds. Controls for hoisting, lowering, and tilting, as well as for the operation of attachments, are located for right-hand operation directly beside the operator, leaving the operator's left hand free for steering. Hose take-up is concealed within the upright construction of the truck, preserving open vision for the driver and safeguarding the hydraulic system from damage. **Yale & Towne Manufacturing Co.**
... for more details, circle No. 269 on postcard

PORTABLE PAINT HEATER

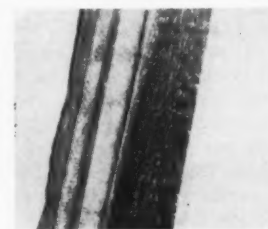
... for on-the-job hot spray painting



For use in maintenance and the contract painting fields, this paint heater is mounted on a two-wheel cart similar to a golf cart, and is easily portable for on-the-job hot spray painting. Portable units are available with either 3- or 6-kw. heaters, with the larger model producing ample heat so that more than one spray gun can be used. The 3-kw. model operates on 115 v., while the larger unit requires 230-v. service. Material to be spray-applied is heated in the heat exchanger where the transfer of heat from water to paint is effected. In the fluid hose the paint temperature remains constant because of the heat jacket through which hot water circulates. Temperature of the water in the unit is controlled by an adjustable manual thermostat. **DeVilbiss Co.**
... for more details, circle No. 270 on postcard

LIGHT WEIGHT PIPE INSULATION

... for low pressure steam lines



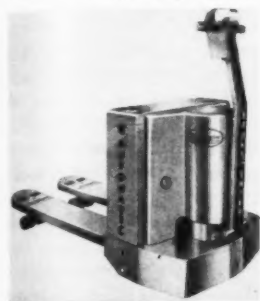
This low pressure pipe insulation for installation on cold, hot water, and low pressure steam lines contains a 1/2-in. thickness of fibered Fiberglas insulation and a white jacket of heavy, bleached, creped kraft paper laminated to aluminum foil. No additional finish is necessary, although the jacket may be painted. The foil pro-

vides an efficient vapor barrier. Light in weight and made of fibers that are inorganic and dimensionally stable, the product will not rot or shrink. It is designed for use with temperatures ranging from 50 to 250 deg. F. Sizes are 1/4 through 12 in. for iron pipes and 1/2-in. outside diameter through 4 1/8 in. O.D. copper tubing. It comes in 36-in. lengths. *Owens-Corning Fiberglas Corp.*

... for more details, circle No. 271 on postcard

ELECTRIC INDUSTRIAL TRUCK

... with spring-loaded pawls



The Transporter series, a new line of operator-led, electric-driven industrial trucks, incorporates several features aimed at improved maneuverability and ease of maintenance. Among the features is the Pallet-Chek, a set of spring-loaded pawls that holds the unloaded pallet firmly while the forks enter. Three-point lubrication allows all load bearing surfaces to be lubricated regularly in just a few seconds. Compact design of the series reduces aisle space requirements; the trucks measure 21 1/2 in. plus length of load but still have a standard 8 1/4-in. battery compartment. Three-speed control permits the operator to inch his truck forward or backward smoothly. Another special feature is the steel plate that secures the wheel, which, when removed and reversed, becomes a wheel puller. Pictured is the WP4 Model pallet truck. *Automatic Transportation Co.*

... for more details, circle No. 272 on postcard

HELIWELD HEAD

... provides automatic weld cycle



This electronically controlled Model C Heliweld unit, with automatic head, has a single switch which causes the holder to move downward and start the arc; the arc length is maintained constant throughout the weld by automatic up and down movement of holder to follow irregular surfaces. Head can be operated in horizontal as well as vertical position. The unit was primarily designed for d-c welding with argon or helium shielding gases or a mixture of the two, but can also be used for

LET AN AUTOMATIC ANSWERING SET ANSWER YOUR PHONE WHEN YOU'RE NOT IN



With an Automatic Answering Set you can be sure your telephone calls will be answered when no one's in the office. You can record a message to let callers know when you'll be back or where you may be reached. In turn, they can leave a message or their telephone number for you. When you return, you can play back what they said.

All kinds of businesses, large and small, find an Automatic Answering Set pays for itself in lots of ways. And after one-time installation charge, it costs only \$12.50 a month. For a demonstration, just call your telephone business office.



Pacific Telephone

... for more details, circle No. 87 on Reader Service Postcard

How can I electroclean
steel at lower cost?

1

How can I clean brass
with less danger
of tarnishing?

2

How can I reduce
"cleaning rejects"
of zinc die castings?

3

Oakite gives good answers in these three booklets:

- 1 "Four good steps toward better electroplating on steel"
- 2 "What's NEW for electrocleaning brass and other copper alloys"
- 3 "Good news about electrocleaning zinc-base die castings"

FREE For booklets concerned with your problems, write Oakite Products, Inc., 1001 E. First St., Los Angeles, or 681 Market St., San Francisco, Calif.

Technical Service Representatives in Principal Cities of U.S. and Canada



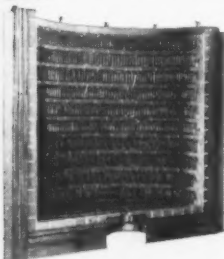
... for more details, circle No. 88 on Reader Service Postcard

POSITIVE TEMPERATURE CONTROL — No Over-Heat!

TRENT "HIGH-TEMPERATURE" JACKETS

with TRENT "Folded-and-Formed" Heating Units

Only TRENT "Folded-and-Formed" ribbon type resistor heating element provides controlled, uniform radiant heat up to 2000°F. ... the greatest radiating surface per square inch of element cross section of any electrical heating element! And only TRENT Heating Jackets offer these design advantages to assure efficient processing operations wherever high-temperature radiant heat with positive control is essential.



- Temperatures to 2000°F. without Pressure Equipment
- Maximum Heat Input
- "Double-Boiler" type Unit and Chamber Control
- Heat Zone Control—either Manual or Automatic
- Brick Insulation or Appropriate Low Temperature Insulation Depending on Operating Requirements
- All-Welded Internal Connections
- Rapid Heat Decline after Unit is De-energized
- Maximum Element and Jacket Life — Minimum Maintenance

Let an experienced Trent Heating Engineer show you how Trent "High-Temperature" Jackets with Trent "Folded-and-Formed" Heating Units can mean trouble-free controlled heat for the kettles, tanks, autoclaves and similar process vessels you use or design. Or write for Bulletin 72-E.

Trent Representatives in Principal Cities Coast to Coast

TRENT INC.

Electrically Heated Industrial Equipment
242 LEVERINGTON AVE., PHILA. 27, PA.
In Canada Supreme Power Supplies, Limited, Toronto 14

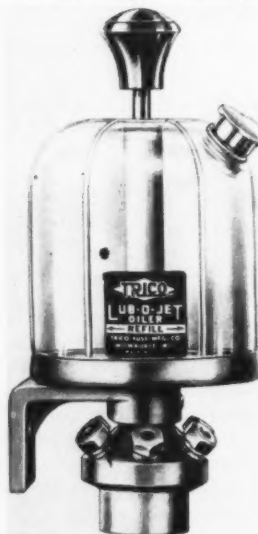
... for more details, circle No. 89 on Reader Service Postcard

a-c with adapting equipment. Assembly consists of a head with a 32-in. machine holder which accommodates electrodes from .04 in. to 5/32-in. diameter up to 24 in. long, a main control panel, and a remote control operator's station. Water and gas controls are included on the main control panel. *Air Reduction Pacific Co.*

... for more details, circle No. 273 on postcard

OILING SYSTEM

... for single, multiple bearing points



Lub-O-Jet is a centrally located self-contained oiling system that delivers oil under pressure to various points on equipment such as line shafts, gears, chains, cams, gibs, lower cone spindles, etc. The system has a pressure pump that is built into a 4-oz. shatterproof reservoir; oil supply is always visible. A six-outlet distributor is connected to the reservoir assembly; tubing is attached to the distributor outlets and runs to the bearing points, which can be as much as 100 ft. away in any direction. A small amount of oil is fed to all bearings simultaneously each time the pump is

stroked. *Trico Fuse Manufacturing Co.*

... for more details, circle No. 274 on postcard



STRONG enough for any shipment
LOW enough in Cost to discard after use
LIGHT enough to cut shipping costs

GREAT LAKES CARBON CORPORATION
612 So. Flower St., Los Angeles 17, Calif.

EVJU PRODUCTS COMPANY

Sales Agents for California and Hawaii

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... for more details, circle No. 90 on Reader Service Postcard

WESTERN INDUSTRY — June 1956

SIT-DOWN ELECTRIC FORK

... measures only 67 in.



Measuring only 67 in. to the face of the fork carriage, this sit-down electric fork lift truck will operate in aisles as narrow as 10 ft., 6 in. Of 4,000-lb. capacity, the Model K-51-AT will travel under load from 5½ to 6 mph. Loads can be lifted at speeds of 25 to 30 fpm. Designed for stability, the truck has four widely spaced carriage rollers bearing against the channels in addition to four channel thrust rollers to resist off-center loading side thrust. Channels can be tilted forward 5 deg., backward 11½ deg. The model has four speeds forward and four reverse and is equipped with caster wheel steering. *Yale & Towne Manufacturing Co.*

... for more details, circle No. 275 on postcard

TOGGLE SWITCH

... equipped with electrical memory



This toggle switch with electrical memory is the first of a new Micro Switch series. The switch assembly uses three single-pole, double-throw functional basic switches and one single-pole, double-throw memory switch. In application the memory switch indicates through a pilot light or buzzer which circuit was last actuated. The three functional switches operate at three lever positions; two of the switches are actuated when

the lever is moved to one extreme position while the third switch is actuated in the other extreme position. The basic switch, or electrical memory switch, is actuated in one extreme lever position and released in the other extreme position. The switch is especially designed to provide positive actuation and prevent false signals or operation from partial movement of the toggle lever. *Micro Switch Division, Minneapolis-Honeywell Regulator Co.*

... for more details, circle No. 276 on postcard

PORTABLE ELECTRIC OVEN

... will nest, for use in groups



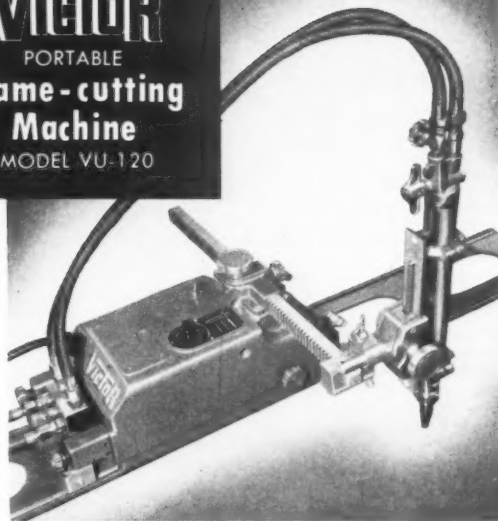
Industrial uses for this portable electric oven include baking enamels, lacquer, wrinkles, and other finishes; dehydrating bobbins, coil forms, paper tubing; drying plastic granules and preheating sheets; preheating molds; processing; laboratories. Features claimed are uniform temperature throughout, wide

range of constant temperature, forced circulation by means of fan. Can be used in groups or individually. *Grieve-Hendry Co., Inc.*

... for more details, circle No. 277 on postcard

NOW, Speeds from 0 to 180" per minute

with new
VICTOR
PORTABLE
**Flame-cutting
Machine**
MODEL VU-120



Model VU-120 weighs only 35 lbs. Main wheels run on ball bearings; casters swivel on ball bearings, run on oilite bearings, are shrouded as protection against slag.

Operates at same speeds forward or reverse.

Cuts straight lines, circles, square or bevel kerfs.

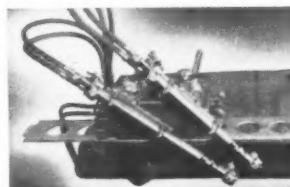
Adaptable to many automatic welding applications.

Now constant running motor and 3-position torque-converter transmission of new Model VU-120 bring you speeds from 0 to 180" per minute—forward and reverse—without loss of power at low speeds. In neutral position, machine free wheels so you can set up easily and quickly. Wide speed range enables you to adapt travel carriage to many automatic welding applications, using either submerged or inert arc.

You get remarkable accuracy from the Model VU-120. Floating rear caster practically eliminates side tilt and wobble. There's no "creeping"—shut off machine and it stops instantly.

Universal torch holder accommodates any model VICTOR machine cutting torch, with or without gear rack. Two torch holders can be used if desired. Case is pre-drilled for extra torch holder, side guide roller, or counterweight.

Try the fast-operating VU-120. Ask your VICTOR dealer for a demonstration on your job NOW ... or write us for descriptive Bulletin 353.



Torches on Model VU-120 easily angled for bevel cuts. Machine accommodates both 2 or 3-hose torches, and in certain set-ups each holder can handle multiple torches.

FOR MAXIMUM
EFFICIENCY AND SAFETY,
USE GENUINE VICTOR
TIPS AND PARTS

VICTOR
for welding

VICTOR EQUIPMENT COMPANY

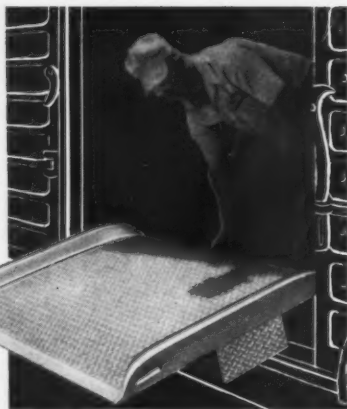
Mfrs. of welding & cutting equipment; hardfacing rods, blasting nozzles; cobalt & tungsten castings; straightline and shape cutting machines.

844 Folsom St.
San Francisco 7

3821 Santa Fe Avenue
Los Angeles 58

... for more details, circle No. 91 on Reader Service Postcard

man
putting
down
a
sound
investment!



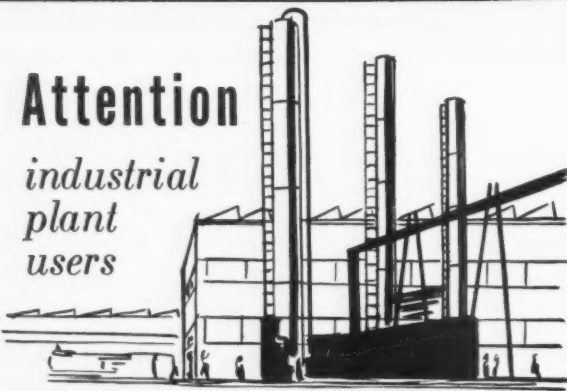
This company has made a wise investment—one which will pay many dividends over a long period of time! The man above is dropping a Magliner magnesium dock board in place on the company's dock. This new Magliner will speed loading . . . get more out of power trucks and other loading equipment . . . keep costs down! Made of light, strong magnesium, it will protect men, loads and equipment against accidents and costly damage. It will also pay other big dividends! Magliners are low in initial cost—and because they provide dependable, long-life service with less maintenance they give you greater economy *ALL* ways! Find out today, how Magliner dock boards can cut costs in your operation. Write for Bulletin DB-204!



MAGLINE INC. • P.O. BOX 76 • PINCONNING, MICHIGAN
Canadian Factory: Magline of Canada, Ltd., Renfrew, Ontario

... for more details, circle No. 92 on Reader Service Postcard

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industrial
plant
users



**We are Power Transmission
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COMPLETE STOCKS, EXPERT SERVICE AND FAST DELIVERY



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118

AIR-POWERED DRILL MOTOR

... close-tolerance work made automatic

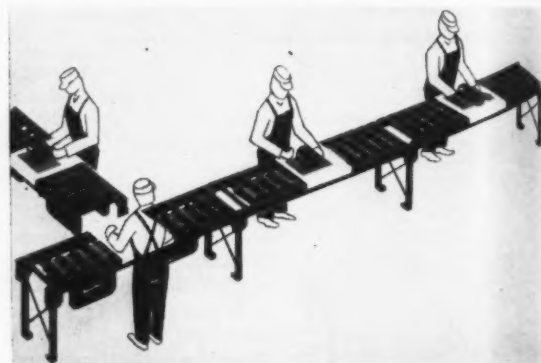


Winslow Spacematic tool drills and countersinks close tolerance holes in one operation, without drill jigs, straps, and fixtures. Collet in foot of Spacematic tool is inserted into previously drilled hole, tool is aligned to work, and operator presses trigger. Adjustments provide for rate of drill feed and drill countersink depth. Light in weight; designed for operation by unskilled labor. Winslow Product Engineering Corp.

... for more details, circle No. 278 on postcard

CONVEYORIZED WORK BENCH

... for changing assembly operations



Flow Bench is a conveyorized work bench which is available as a standardized product and does not require high priced, specially designed components. Because the unit's standard parts can be rearranged into new Flow Bench lines quickly and easily, it is suited for assembly operations subject to frequent change. To meet progressive assembly techniques, the bench has been designed with both storage and conveyor. Each work station along the conveyor has a rack unit designed to hold a predetermined number of parts; the conveyor setup allows automatic accumulation of basic units requiring work. Flow Bench has pop-out rollers which can be removed to establish work stations. Adjustable pressure arrangement permits adjustment to desired belt and roller contact so that work can be transported or accumulated as desired. Rapids-Standard Co.

... for more details, circle No. 279 on postcard

Improve Quality
of Your Product

with

**SORBOCAST
CAST IRON
Dayton Foundry**

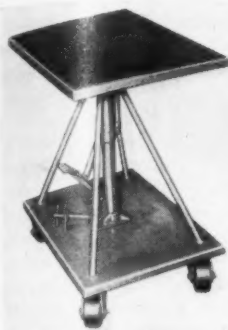
HOLLYDALE, CALIFORNIA NEVADA 6-1251

... for more details, circle No. 94 on Reader Service Postcard

WESTERN INDUSTRY — June 1956

HYDRAULIC UTILITY TABLE

... adjustable to various working heights



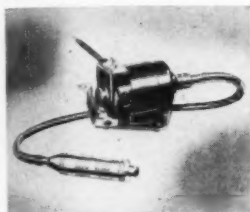
This hydraulically operated utility table of 1,000-lb. capacity can be adjusted to various working heights and moved from place to place on 5-in. caster wheels. Table top, which is 28 in. above the floor level and has an elevation of 16 in., is raised and lowered with a foot treadle. An overload by-pass valve provides safe operation and prevents damage to the hydraulic unit. Table is 20 x 26 in.

Rack Hydraulic Equipment Corp.

... for more details, circle No. 280 on postcard

FLEXIBLE SHAFT TOOL

... maintains sustained torque under load



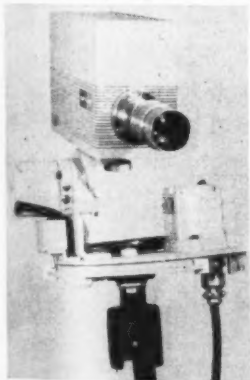
Super-Flex, recommended for all types of production, bench finishing, deburring, tool and die grinding, sharpening, etc., is a high speed flexible shaft tool driven by a 1/4-hp. motor that develops 22,000 rpm. Sheath of the tool, which has the power

to maintain a sustained torque under load, consists of three layers—armored wire casing, wire braid, and neoprene cover. Around the spun wire shaft is a bronze liner, lubricating the shaft, which acts as a bearing to confine rotation within a specific radius. A threaded adaptor spun to the sheath locks both to the handpiece. Handpiece, which is 6 3/4 in. long and weighs 14 oz., takes 1/4 in. and 1/8 in. shank-mounted wheels and points, and carbide burrs up to 3/8 in. in diameter by using rubber-flex collets. Dumore Co.

... for more details, circle No. 281 on postcard

INDUSTRIAL TELEVISION

... with plug-in subassembly construction



Incorporating removable plug-in subassembly construction, this 1985 industrial television for closed circuits consists of a small camera weighing less than 5 lb., a camera control, and monitor. Monitors are available in 10-, 17-, or 21-in. sizes. Camera control consists of four subassemblies—video line amplifier, deflection, phantastron sync generator, and electronically regulated power supply. An amplifier design using cas-

code stages throughout the camera and line amplifiers has increased the overall sensitivity of the system. Remote electrical control panels can be plugged into the rear of the camera control. Accessories include remote pan and tilt and lens control mechanism, remote three-lens turret, explosion-proof, weather-proof, and underwater housings, and remote monitors. Kay Lab

... for more details, circle No. 282 on postcard

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Evans KING SIZE 10-ft. White-Tape
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10-ft. 3/4" Wide Steel Tape
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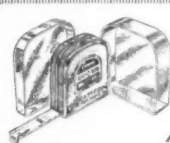


The 33% wider blade (full 3/4") stays straight up—will not bend when making measurements. Chrome plated zinc die-cast case. Free belt clip for handy carrying and Free Tenite Utility Case. Self-adjusting sliding hook for accurate inside-outside measuring.

Also available in 6, 8, 12-ft. lengths.

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Work in feet and inches? Read Here
Work in inches? Read Here



EVANS 12-ft. Pocket WHITE-TAPE

Measures a full 12 feet—eliminates adding two measurements as with shorter tapes. Regular 1/2" wide blade. Chrome plated zinc die-cast case. Self-adjusting sliding hook for 100% accurate inside or outside measurements. Free transparent Tenite Utility Case.

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3224

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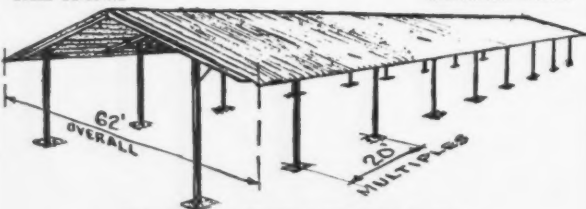
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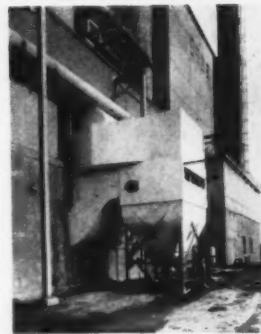
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120

CENTRIFUGAL SEPARATOR

... for more efficient dust control

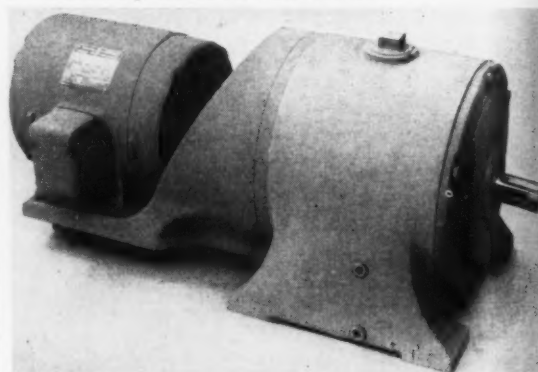


Multi-tube centrifugal separator newly offered by Hagan Corp. has an unusual design in inlet head and guide vanes which results in higher separation efficiency. Gas whirls in space between inner and outer shell of tube, throwing out more of the trapped dust particles than previous designs, according to manufacturer. Separator is now being used by an Eastern manufacturer to control fly ash on a steam boiler burning powdered coal, with efficiency of over 97%. Hagan Corp.

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... uses any standard GE motor



The Series N gear unit, part of a new line of Pacific gearmotors, whose output speeds can be changed in minutes with the substitution of a single gear set, is a unit on which any standard GE motor can be mounted and coupled directly to the gear. Flexibility of the unit's design permits a variety of motor types and enclosures, polyphase, single phase, or d-c in the same frame size, to be used interchangeably on the Series N. First-stage gear ratios can be changed easily with the substitution of a single gear set in an operation requiring only standard shop tools. Conversion from double to triple reduction can be made with the substitution of a pre-assembled one piece, third-stage gear without uncoupling the motor from the gear frame. Available in ratings from 1 through 5 hp. General Electric Co.

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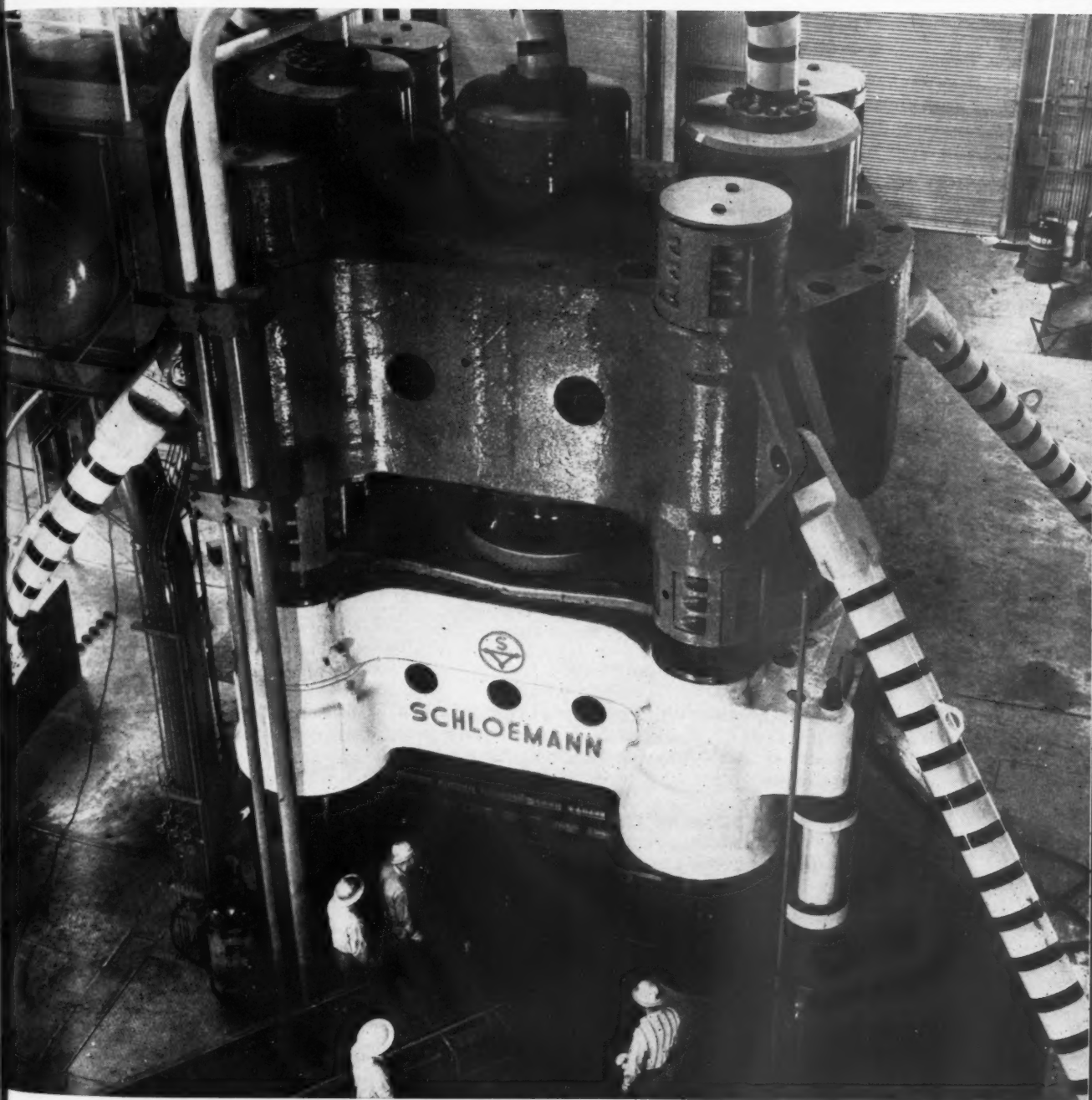
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WESTERN INDUSTRY — June 1956

THE INDUSTRIAL WEST ON ITS WAY

plants • production • distribution • personnel



WEST'S LARGEST HYDRAULIC FORGING PRESS, capable of applying force of 8,000 tons, is now operating at Vernon, Calif., works of Aluminum Co. of America to produce large precision aluminum forgings primarily for aircraft. Press is 49 ft. high overall, weighs 750 tons. Striped 14-in. diameter struts make it earthquake-proof. With smaller 1,500-ton press installed last fall and new 27,000-sq. ft. building to house both, entire project cost approx. \$4,000,000.

GUIDELINES

● **\$113,000,000 KAISER STEEL EXPANSION AT FONTANA, CALIF., MILL:** Largest single plant expansion in the West's industrial history, this will **boost mill's output by 40%**. Looks like a **breather for the steel shortage**—present consumption is twice Western production capacity—but . . .

Annual steel consumption will also go up during two-year construction period at Kaiser.

● **NEW ELECTRONICS PLANTS ACCOUNT FOR ALMOST \$100,000,000** in the news this month: Ford's new \$40,000,000 subsidiary, **Aeronutronics Systems**; Convair's \$40,000,000 Atlas intercontinental ballistics missile plant to go in near San Diego; **Ramo-Wooldridge's** nine-building, \$10,000,000 electronics systems and guided missile research and development center in LA; **Sperry Gyroscope's** Sunnyvale, Calif., plant-to-be; **Thickol Chemical's** \$2,000,000 rocket and guided missile center near Corinne, Utah; **Donner Scientific's** planned production facility in Concord, Calif., (first plant for new "instrument park" there); **Altec-Lansing's** \$1,000,000 plant scheduled for LA; and **Lockheed's** tripled-in-size plans for Sunnyvale, Calif., plant.

It all adds up to an even greater demand for engineers and scientists in the West: Convair's Atlas missile operation employs several thousand now; **1958 employment** will total **6,600**, many of whom will be engineers (if they can be found and wooed—see WESTERN INDUSTRY'S special report, p. 44, May issue).

Ford's Aeronutronics subsidiary formation contains an interesting note on the engineer-shortage situation: absorbed into the operation, for something less than 25% of total stock, is **Systems Research Corp.** of LA—made up largely of 30 engineers and scientists who quit Lockheed Aircraft (proud father of an electronics giant under way in Sunnyvale, Calif.) a few months ago.

Lockheed issued a surprise announcement at its Sunnyvale groundbreaking ceremonies May 19: Plant will be **three times size originally planned**—indicative of industry's "government-persuaded" dispersal of operations.

Lockheed and General Motors, whose rapid-fire new plant decisions recently cinched (if cinching was needed) **Sunnyvale's** industrial success, **will be joined by one and probably more electronics plants:** **Sperry Gyroscope** will definitely join the Sunnyvale honor roll and **Ford** is still weighing location decision, but it's been boiled down to either San Francisco or Los Angeles areas. **Could be Sunnyvale.**

● **A BOOST FOR CANNERS** and the in-between operation of can manufacture: U. S. Steel plans **multi-million dollar electrolytic tin plate** production expansion to **increase output by 55%** at Pittsburgh, Calif., plant. This and three new can plant expansion announcements during the last six mos. point to **continued growth** in one of the West's "old-line" industries—**canning and packing.**

● **PLENTY OF THE BASIC MATERIAL—CEMENT**—is required for the West's continued construction boom: **California-Portland** plans **\$10,000,000 expansion** in Creal, Calif., to increase output by 3,000,000 bbl. per yr.; a **\$13,000,000 cement plant** is scheduled for construction in Vancouver, B. C., by **Lafarge Cement of North America, Ltd.**; these join a list of **four other cement plants and expansions** announced during the past 6 mos.

● **MORE BASIC MATERIALS WILL COME OF \$76,000,000 mining investment** announcements and it's all going into cost reduction improvements and developments by two firms in two states: **Kennecott Copper** plans **\$40,000,000 program** in Arizona; **Anaconda** announces **\$36,000,000 going into Montana mines.**

● **AND THE WEST'S BOOMING TRANSPORTATION INDUSTRY** accounts for **Fruehauf's** plans to build its **third Western plant** in Vina Vista, 5 mi. east of Ontario, Calif.; Inter city **tonnage increased by 71.1% in the West** during 6 yr., while increase for **entire U. S. was only 65.4%.**

Fruehauf's new plant marks the beginning of a **new California city** and will account for **500 families** of its population upon initial opening and **500 more in next 5 yr.**

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INTEGRAL FRAME TANKER above was built by Fruehauf for Pacific Intermountain Express. Its outstanding new features are rail mounting of the engine and a new transmission.

Third Los Angeles area plant for Fruehauf

Fruehauf Trailer Co. has announced plans to construct a 250,000-sq. ft. truck-trailer manufacturing plant near Ontario, Calif., 41 mi. east of Los Angeles in the Vina Vista industrial center. The new plant, which will be Fruehauf's third in the Los Angeles area, will be started in October on a 100-acre site, with the first truck-trailers scheduled to roll off by February 1957.

The plant will be of steel construction and house both production and

office space. About 500 workers will be employed initially and plans call for 1,000 workers within five years.

According to President Roy Fruehauf, the "big reason for construction of still another Fruehauf plant in the Los Angeles area is the booming transport industry in California and the West Coast." Fruehauf said that for the first three months of 1956 the firm's sales were 20% higher than for 1955's first quarter. He also reported higher profits.

California Portland plans \$10,000,000 expansion

California Portland Cement Co., Los Angeles, will expand its cement manufacturing capacity at Creal, Calif., from 2,500,000 bbl. to 5,500,000 bbl. a year. Costing more than \$10,000,000, the expansion will be completed during the last half of 1957.

U. S. Steel to increase tin plate production

Work has begun on a multi-million dollar expansion program aimed at increasing by nearly 55% U. S. Steel's electrolytic tin plate production. Tin plate production capacity at the Pittsburgh, Calif., plant will be upped from 285,000 tons a year to an estimated 440,000 tons.

The electrolytic line, to be completed next year, will be more than 320 ft. long and will produce a maximum of 1,250 ft. of tin plate a minute.

Anaconda Co. announces \$36,000,000 program

A \$36,000,000 mining and development program has been announced by Anaconda Co. for its Montana copper and zinc operations in Butte. About \$20,000,000 will be spent on the Ryan shaft, while another \$7,000,000 is marked for equipment at the Berke-

Ford forms \$10,000,000 guided missile subsidiary

Ford Motor Co. is forming a new subsidiary to be called Aeronutronic Systems, Inc., to design, develop, and manufacture guided missile systems. In its \$10,000,000 entry into the missile field, Ford will absorb a group of 30 engineers and scientists who have formed Systems Research Corp. in Los Angeles, and who were formerly with Lockheed Aircraft.

Ford will hold 75% of the stock in the new subsidiary while the balance will go to those associated

with the company also plans to spend \$9,000,000 for smelter and mill changes at Anaconda and for railroad rolling stock.

By the end of 1960 the company expects to have added 2,500 men to its payrolls for the mine.

Calstrip Steel completes expansion program

Calstrip Steel Corp., Los Angeles, has completed an expansion program which added shipping space of 5,000 sq. ft., a covered loading dock, and new offices to its facilities. New annealing furnaces have also been completed and installed.

Pacific Fruit plans ice manufacturing plant

Pacific Fruit Express Co. will build an ice manufacturing plant at the Ogden, Utah, Riverdale yard to serve perishable traffic moving east through Ogden. Total cost of the project is estimated at about \$1,000,000.

Facilities will include an ice production and an administration building. Manufacturing capacity will be 600 tons daily.

Warren & Bailey Co. adds customer service

A customer service department has been added at Warren & Bailey Co., industrial and mill supply firm. The department was established to help the firm give faster delivery service on orders. *Blanche Scholl* will head the department.

\$2,000,000 missile center planned by Thiokol Chemical

Thiokol Chemical Corp. of Trenton, N. J., has announced plans to construct a \$2,000,000 rocket and guided missile research and development center near Corinne, Utah. Rockets and guided missiles will be built and tested for propulsion at the plant, which will employ about 500 people when completed.

with Systems Research and a few others who may be with the firm in the future.

The money from Ford will go into a research and development facility which will probably be located either in the Los Angeles or San Francisco area. Construction will start sometime in 1956 and the plant should be completed in 1958. The facilities will be used for developing peacetime uses in the fields of electronics, physics, and nucleonics.

Lockheed to triple size of Sunnyvale plant

Lockheed Aircraft Corp. has broken ground for its missile systems division's plant at Sunnyvale, Calif., and announced that the plant will be almost three times as large as originally planned.

Lockheed will now have four buildings with a total of 260,000 sq. ft., instead of one 96,000-sq. ft. building. Scheduled for completion by early summer of 1957, the facilities by the end of that year are expected to employ about 2,000 workers including those at the division's laboratory now under construction at Stanford University. A total of \$11,000,000 is being spent on the two San Francisco Bay Area projects.

Garrett Corp. completes \$1,300,000 structure

Garrett Corp. has completed a \$1,300,000 structure for housing the engineering facilities of its AiResearch Manufacturing Division and its own administrative offices. The new headquarters is adjacent to Los Angeles International Airport.

Containing 82,000 sq. ft. of floor space, the building provides space and facilities for 1,000 members of the AiResearch staff, as well as administrative and accounting offices. Basic construction of the building is structural steel with steel joists; the facade is of ceramic mosaic tile spandrels.

Crown Zellerbach to install \$2,000,000 recovery furnace

Crown Zellerbach Corp. will install another Kraft recovery furnace at its Camas, Wash., mill. The furnace, costing about \$2,000,000, will burn waste cooking liquors from the kraft pulping process.

A dimethyl sulfide pilot plant has started operation at Camas with a capacity of 2,000,000 lb. a year. The plant employs the Swedish process and is expected to produce dimethyl sulfide in larger quantities and at lower prices than have been possible before.

Altec Lansing will build 100,000-sq. ft. Anaheim plant

Altec Lansing Corp., Los Angeles, will build a 100,000-sq. ft. plant in Anaheim to produce sound equipment, loud speakers, and acoustic-measurement instruments. Construction will start this month and should be completed late in the year.

Cost of the land and plant will be about \$1,000,000. A 10,000-sq. ft. office building will be included. Structures are going up on 15 acres.

The facilities at Sunnyvale will include a 96,000-sq. ft. manufacturing plant, an engineering building of the same size, a cafeteria building with 20,000 sq. ft., and an administration building of 48,000 sq. ft.

There is a chance, according to Courtlandt Gross, executive vice president of Lockheed, that another 96,000-sq. ft. building will be built for manufacturing on the 275 acres at Sunnyvale.

A few weeks ago Lockheed also announced that its Van Nuys, Calif., plant would remain open. This plant was to close when the Sunnyvale plant opened.

Square D begins construction on \$400,000 branch facility

Square D Co. has begun construction on a \$400,000 branch plant, warehouse, and office facility in Denver. Initial construction will provide 11,000 sq. ft. of floor space in a single-story structure, which will be completed in about 6 mo.

The plant will custom-assemble switchboards, lighting and power panelboards, switchgear, and other electrical distribution and control devices. It will also warehouse standard switches, circuit breakers, motor starters, and other related products that are produced in other Square D plants.

George Helbock has been named Denver district manager.

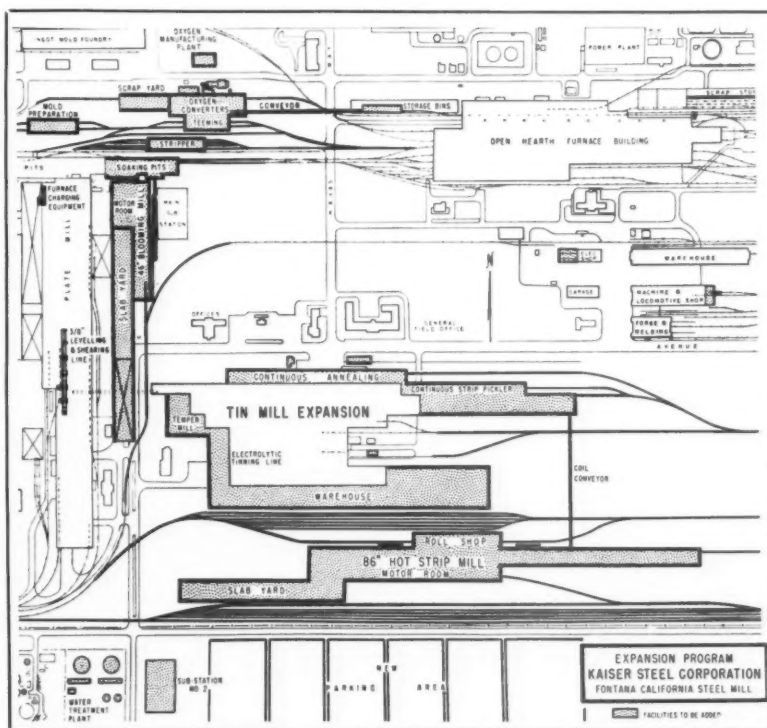
\$113,000,000 expansion for Kaiser

Believed to be the largest single expansion of an industrial plant in West Coast history, a 40% increase in production facilities at Kaiser Steel Corp.'s Fontana, Calif., steel mill will begin immediately. After-expansion production will amount to 1,528,000 tons per year as compared to present output of 1,084,000 tons.

Major units to be installed in expansion program will include an oxygen steelmaking process plant for ingot production (first of its kind in

the West), a slabbing mill for initial rolling of ingots, and several major changes and additions to existing hot strip, plate, and tin mills. Operation of new facilities will require employment of 1,600 additional workers.

Although each unit will be put into operation as completed, it is estimated operation of all new facilities will be attained in about two years. Design and construction of expansion work is being handled for Kaiser Steel by Kaiser Engineers.



40% PRODUCTION INCREASE will be attained by Kaiser Steel at Fontana, Calif., when equipment installations and building expansions outlined above are completed.

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Plomb Tool reorganizes Consolidated Tool Co.



J. C. Galbreath

Plomb Tool Co. has reorganized the recently acquired Consolidated Tool Co. so that it will serve the specific needs of the aircraft industry. Consolidated will now function as a subsidiary of Plomb.

Consolidated has been a supplier of jigs, fixtures, dies, and other non-tool items. These lines will be expanded and will also include experimental parts, special forgings and dies, ferrous and non-ferrous stampings, and all types of machine work.

J. C. Galbreath, who has served as vice president and works manager of Plomb, will head the reorganized Consolidated Tool.

Stimson Lumber installs green veneer plant

Installation of a green veneer plant has been made by Stimson Lumber Co. at its Forest Grove, Ore., site. The veneer plant, with a rated capacity of one shift of 90,000,000 sq. ft. annually, will replace part of the present lumber production and help the firm make maximum use of the entire tree.

Production is slated to begin in November. Ultimate investment will be about \$400,000.

Olympia Brewing plans \$1,100,000 expansion

Plans for a \$1,100,000 plant expansion have been announced by Olympia Brewing Co. Included is the extension of fermentation and storage facilities by the construction of a five-story structure.

To be built of structural steel and reinforced concrete next to the existing building, the facilities will be completed during April 1957.

See's Candy to build So. San Francisco plant

Ground will be broken early this summer for a \$500,000 candy plant for See's Candy Co. The structure will serve as company headquarters and manufacturing center for See's. The firm is moving from its present quarters to make room for a freeway in San Francisco.

Paramount Paint to double manufacturing, research areas

Paramount Paint & Lacquer Co., manufacturers of protective finishes, has embarked on a \$200,000 expansion program which will more than double both its manufacturing and research areas. The new facilities will occupy an entire block adjacent to its existing plant in Los Angeles.

Grading and excavation for a parking lot and underground storage tanks are underway. The two existing structures are being incorporated into the new additions. Plant Engineer Jay I. Wimberly is directing the expansion.

S&W opens \$2,500,000 headquarters in San Francisco

International headquarters of S & W Fine Foods, Inc., have been formally opened in San Francisco. The opening marks the culmination of an extensive building and modernization program started nine years ago for all seven divisions of the company.

Located on an 11-acre site, the \$2,500,000 facilities include a 240,000-sq. ft warehouse, a coffee processing plant, and a two-story administration building.

Speaking at the opening ceremony were Adrien J. Falk, retired president of S & W and Joseph Blumlein, new president.

From its new location S & W will serve northern California, Nevada, a section of the Mountain States, and carry on its overseas trade.

The new plant is of steel frame



COMPLETE CONTROL of S & W's new automatic coffee processing plant is maintained by switch apparatus located on this control panel.

structure will tilt-up concrete walls. It is one story, except for a four-story tower for coffee processing.

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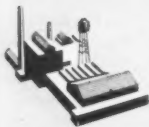


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MORE THAN 500,000 SQ. FT. of production space will be added to Carrier Corp. facilities when new plant in Puente, Calif., is completed.

Carrier plans \$6,000,000 Western plant

Construction of a \$6,000,000 West Coast plant for the production of air conditioning equipment, furnaces, and water heaters will be started this year by Carrier Corp. With an area of more than 500,000 sq. ft., the new facilities will be located on a 68-acre plot at Puente, Calif., 18 miles east of Los Angeles.

The plant will provide more space

for the production needs of the Day & Night and Payne divisions of the firm, and in addition, will produce certain types of equipment for other Carrier divisions.

William J. Bailey, vice president and general manager of Carrier's Monrovia divisions, will be in charge of the new plant, which is scheduled for 1957 completion.

United Air Lines, Pacific Truck sign transport agreement

An integrated truck-air service agreement between United Air Lines and Pacific Motor Trucking Co., designed to expedite the movement of goods from points in Pacific's surface transportation network, has been entered into by the two companies.

Under the agreement Pacific Motor will carry freight shipments from 1,600 communities in California, Nevada, and Oregon to United's major air freight shipping terminals in Los Angeles, San Francisco, Reno, and Portland. Freight will then be boarded on United's flights for delivery to points along its routes.

Consolidated Freightways reorganizes offices

Consolidated Freightways has established virtually autonomous regional headquarters in Portland, Ore., and Indianapolis, Ind.

Portland will be headquarters for the Western region, headed by Harold Gray, and will include all regular route operations West of and including Fargo, N. Dak.

A small administrative and financial staff will be established by the firm in the San Francisco Bay Area. Research and development activities will be brought together in Portland.

Sperry Gyroscope forms Western engineering facility

Sperry Gyroscope Co., Great Neck, N. Y., has formed a West Coast Engineering facility to be known as the Sunnyvale Development Center, Sunnyvale, Calif. Local operations are scheduled to begin shortly.

The Western facility will carry on advanced research and development projects in the fields of radar, fire control, servomechanism, and guided missile systems. The work will be done under the direction of the main engineering division and Dr. L. L. Wheeler, chief engineer at Lake Success, N. Y. E. B. Hammond will manage the Sunnyvale development center.

Immediate plans call for two 10,000-sq. ft. buildings to be used. One is already completed; the second will be finished before fall, 1956.

Wilshire Oil to build new refinery facilities

Some \$2,750,000 will be spent by Wilshire Oil Co. of California for design and construction of new facilities at its Norwalk, Calif., refinery. The new installation will consist of a 10,000 bbl. per day unifiner-platformer.

Object of the expansion is to double capacity. The unit should be completed in January 1957.

Paisley Products acquires Dilco Products, Inc.



Richard Dillinger

Paisley Products, Inc., has acquired the assets, business, and production facilities of Dilco Products, Inc., Redwood City, Calif. The new unit will be Paisley's second on the West Coast and will bring Paisley's adhesive producing facilities to a total of five plants. The other West Coast plant is located in Los Angeles and operates under the name of Woerz Paste & Gum Co.

The Bay Area plant will also act as a distributing and service point for gum products produced by Morningstar, Nicol, Inc., the New York parent company of Paisley.

Richard Dillinger, former head of Dilco, has joined the Morningstar-Paisley organization in a combined sales, production, and managerial capacity.

David Brown establishes Los Angeles area office

David Brown, Inc., has established a Los Angeles area office at 6025 Atlantic Blvd., Maywood. The office will stock speed reducers and gears made by David Brown, as well as packaged drives and variable speed drives.

Building underway for Insley in Puente, Calif.

Construction of extensive manufacturing facilities in Puente, Calif., has been started by Insley Manufacturing Corp. of Indianapolis, crane equipment manufacturer. Located on a 35-acre site, the plant will also house Maxi Corp., an Insley subsidiary.

The new facility will have two

Lafarge Cement to build \$13,000,000 cement plant

Lafarge Cement of North America, Ltd., has announced that it will build a \$13,000,000 cement manufacturing plant near Vancouver, B. C. The plant will be on a 50-acre site on Lulu Island, south of the city, and is scheduled for July 1957 operation.

Reliance Steel Co. changes firm names

Reliance Steel Co., Los Angeles, has changed its name to Reliance Steel & Aluminum Co. The firm's magnesium division will be operated in the future as Reliance Magnesium Co.

The names were changed to "more accurately reflect the nature of Reliance's business," according to William Gimbel, executive vice president. Company organization will not be affected.

Kearfott Co. forms new Western division

Kearfott Co., Inc., of Little Falls, N. J., has a new Western division composed of two plants located in Van Nuys and Pasadena, Calif. Western division headquarters will be at 253 N. Vinado St., Pasadena, where gyroscopes and aircraft control components are manufactured.

John R. Harkness has been appointed the division's general manager. He has been with Kearfott for the past six years as manager of the Western manufacturing division.



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for 1-man
or swing
stage use



here's why
SKY CLIMBER
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Address _____
City _____ Zone _____
State _____

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MANUFACTURING FACILITIES for Insley Manufacturing Corp. are under construction now in Puente, Calif. The new plant will also house Maxi Corp., an Insley subsidiary.

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WELD-BILT PORTABLE ELECTRIC ELEVATORS

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312 Industrial, N. E.
Albuquerque

Myers Equipment Co.
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Portland

WEST BEND EQUIPMENT CORP.
MATERIALS HANDLING ENGINEERS

307 WEST WATER STREET • WEST BEND, WIS.

...for more details, circle No. 104

American Monorail appoints two new reps



MEETING OF MANUFACTURER AND NEW REPRESENTATIVES took place at the American Materials Handling Society Equipment Show and Conference in Los Angeles. Shown above are (left to right) **L. T. Neustad**, President of Grover Engineers, newly appointed San Francisco area distributor for American Monorail Co.; **C. L. Fell**, American Monorail vice president in charge of marketing, from Cleveland, Ohio; **T. A. McMahon** of F. T. Crowe Co., Seattle, Wash., distributor firm; **C. E. Barner**, Western sales manager for American Monorail with headquarters in Cleveland, Ohio; **Ken Kistler**, President of Kistler Industrial Service, newly appointed Phoenix, Ariz., distributor serving Arizona and New Mexico for American Monorail; and **L. P. Helbert**, Los Angeles district manager for American Monorail Co.

Donner expands into 100,000-sq. ft. lab

Donner Scientific Co. is building a 100,000-sq. ft. laboratory structure in Concord, Calif., about 20 mi. east of San Francisco. The structure will be the first plant in Concord's new instrument park.

The air conditioned building will house engineering, manufacturing, and administrative offices and will employ about 500 people when it is completed in 1957.

Donner makes electronics test equipment, general purpose analog computers, and inertial guidance systems for missiles and aircraft.

Work under way at Lear's Santa Monica facility

Work on a two-story wing to be added to Lear, Inc.'s, hangar, built in 1954 to house its Aircraft Engineering Division, is under way and will bring to nearly 200,000 sq. ft. the company's floor space in the Santa Monica area. The structure will have a brick and plate glass facade and will be used for development and manufacturing by Lear's Industrial Products Division.

The Santa Monica expansion is part of a \$3,600,000 building program being carried out by Lear at three of its plants.

Industrial Materials named Speed-D-Burr distributor

Industrial Materials Co., San Francisco, has been appointed by Speed-

D-Burr Corp., Glendale, to distribute its line of precision barrel finishing equipment in the Bay Area, and central and northern California.

Speed-D-Burr will also operate its processing department in Oakland as a subsidiary company known as Micro-matic Deburring Co. **W. T. Elmas** will supervise the company, which has facilities for testing and experimental work, pilot runs, customer process development, and job shop barrel finishing.

Kennecott will spend \$40,000,000 on mines

Kennecott Copper Co. has announced plans for a \$40,000,000 program to lengthen the life and reduce production costs of its Ray Mines Division in Arizona. The program should increase the division's yearly copper production by 20,000 tons by 1958; the firm produced 50,000 tons in 1955.

The program calls for the extension of present mining limits of the pit and the installation of more mining and milling equipment. It also provides for the construction of a smelter to handle output.

Sequoia Process expands manufacturing capacity

Sequoia Process Corp. is expanding its manufacturing capacity by about 600% with the construction of three new buildings in Redwood City, Calif. A manufacturer of specialized elec-

tronics hook-up wire, Sequoia will have production capacity of 115,000,000 conductor feet when the buildings are completed. Present production capacity is 20,000,000 conductor feet.

A new office building is also being added, in addition to the plant facilities.

Schwartzman moves to new manufacturing plant

J. Schwartzman Manufacturing & Supply Co., North Hollywood, Calif., has moved to its new manufacturing plant. Expanded facilities will permit a 100% increase in production for the firm.

The new plant is located on 1 acre of land and has over 50,000 sq. ft. of floor space. It is constructed of tilt-up reinforced concrete.

Babcock division expands San Francisco territory

Tubular products division of Babcock & Wilcox Co. has expanded the territory of its San Francisco office. In addition to its present northern California territory, the San Francisco office will handle the sales of tubular products and welding fittings in Nevada, Idaho, Oregon, and Washington, as well as two Western Canadian provinces.

Robert C. Garvey, assistant district sales manager, is in charge of the San Francisco office.

Withrow Die Casting moves to Hollywood

Withrow Die Casting Co., Southern California manufacturer of aluminum and alloy castings, is moving early this month from Burbank to enlarged quarters in North Hollywood.

The new 18,000-sq. ft. building is a single-story structure, which cost about \$150,000 and is three times the size of Withrow's old quarters. It will house die casting machinery, tools for producing dies, and a complete machine shop.

Coast Aluminum producing aluminum building products

Coast Aluminum Co., Gardena, Calif., has begun production of the

first item in its line of aluminum building products—a complete line of residential aluminum casement windows. The new plant occupies 2½ acres of a 10-acre site.

The firm has completed plans for the construction of a third plant on the site. At present it has a plant fabricating aluminum building products and a second plant for extrusion.

Owen, Brink form Seattle manufacturers' agency

James M. Owen and William J. Brink have formed the Owen-Brink Co., manufacturers' agency with offices in Seattle, Wash. The agency was formerly the James M. Owen Co.

Owen-Brink represents 12 manufacturers of fasteners and industrial hardware and covers a sales territory which includes Idaho, Oregon, Washington, and British Columbia.



NEW COAST ALUMINUM PLANT, where first item in this company's new line of aluminum building products is being manufactured, occupies 2½ acres of 10-acre site.

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EMSCO STEEL LADDERS AND STAIRWAYS

Emsco lightweight adjustable steel stairways and ladders meet all safety requirements and are inexpensive, sturdy and portable.

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...for more details, circle No. 105 on Reader Service Postcard
June 1956 — WESTERN INDUSTRY

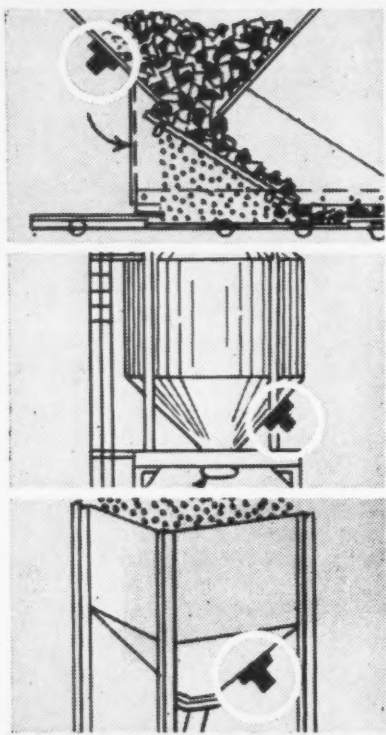


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to keep coal moving smoothly through storage and into your fire box. The *engineered installation* of Cleveland Vibrators on...

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will eliminate delays and save man hours by providing a steady flow of fuel, automatically.

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Air or Electric
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\$40,000,000 plant for Convair

Convair Division of General Dynamics Corp. has let an architectural and engineering contract for a \$40,000,000 plant in San Diego, Calif., to house an autonomous organization devoted to research, development, manufacturing, and testing of the Atlas intercontinental ballistic missile. The plant will be built on a 280-acre site just north of the city.

Employment at the new plant is expected to total 6,600 by 1968. The

Atlas program already employs several thousand engineers, technicians, and production personnel, who are working at the present Convair-San Diego facilities.

Facilities at the new plant, which will have about 1,000,000 sq. ft. of space, will include an engineering and administration building, a test and computer building, and a manufacturing building. Full occupancy is expected by fall, 1957.

Melody Homes builds West Coast factory

Melody Homes Manufacturing Co. of Fort Worth, Tex., has selected Yuba County, Calif., industrial tract as the site of its new West Coast branch factory. Construction of the \$100,000 steel factory buildings has started on the five-acre site, which is three miles south of Marysville.

When the buildings are completed, Melody Homes will have 32,000 sq. ft. of floor space. An additional five-acre tract adjoining the factory site is being reserved for the firm for possible future expansion.

Garrett Supply has two new major lines

Norton Co. and Chain Belt Co. have both appointed the Garrett Supply Co. as their distributor in Southern California and Arizona territories. Complete stocks of Norton grinding wheels ranging from 1/8-in. diameter to 24 in., including Norton's diamond wheel line, will be stocked by the newly appointed distributor firm in its Los Angeles and Phoenix locations. Garrett Supply salesmen have all been recently factory-trained on solutions to grinding wheel application problems.

Complete stocks of the Chain Belt line, which includes chains, sprockets, elevator buckets, roller bearing pillow blocks, shaft takeups, chain couplings, and other power transmission equipment, will also be maintained by Garrett Supply.

Gardner-Denver LA branch occupies new facilities

New office and warehouse facilities in the central manufacturing district of Los Angeles have been occupied by the Los Angeles branch of Gardner-Denver Co.

The building has an office area of 2,400 sq. ft., a concrete and steel machinery warehouse, and an enlarged parts department. New Los Angeles address for the firm is 7654 E. Slauson Ave.

New No. Calif. outlet for Boston Gear Works

The Northern Division of the Republic Supply Co. of California, with headquarters in San Leandro, Calif., has been appointed distributor for Boston Gear's line of stock gears and component machine parts. Comprehensive stocks of the 6,500-item line are being maintained in the newly appointed distributor's warehouses. To insure adequate technical service to industry in Northern California

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**INDUSTRIAL
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...for more details, circle No. 108

and Nevada, Republic Supply has recently completed a 40-hr. training program to acquaint all sales employees with the newly acquired line of mechanical power transmission equipment.

Ramo-Wooldridge starts 9-building research center

The initial unit of Ramo-Wooldridge Corp.'s new \$10,000,000, nine-building, research and development center is under construction on a 41-acre plot near the Los Angeles International Airport. The new center, when it is completed, is expected to accommodate approximately 4,500 people.

The building under construction will contain 104,000 sq. ft. of floor space and should be ready for occupancy early in November. The five divisional buildings planned will also have 104,000 sq. ft. of floor space each. The manufacturing facility will be a single story building of 100,000 sq. ft. with a mezzanine giving an additional 50,000 sq. ft. of working space. Work will begin on the next buildings this month. The entire center will be completed by the middle of 1958.

Bellows consolidates West Coast activities



NEW HEADQUARTERS for Bellows Co. of California in Glendale, Calif., will also house the Smith Johnson manufacturing division of the firm.

Stillman Rubber acquires two polyvinyl firms

Stillman Rubber Co., Culver City, Calif., has acquired Tele-Muff Co., San Fernando manufacturer of polyvinyl specialty products, and Plasticast, Inc., also of San Fernando.

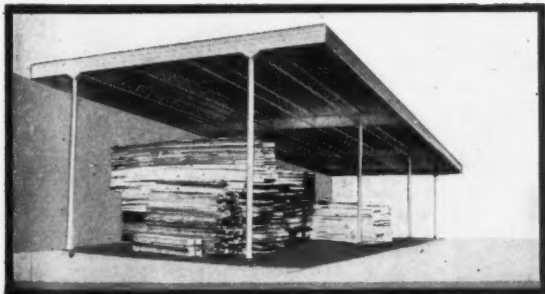
Tele-Muff will be operated as the Tele-Muff Division of Stillman, and Plasticast as the Plasticast Division, which will specialize in polyvinyl dipping and coating, slush-molding, and low-pressure injection molding.

PG & E plans conversion of natural gas field

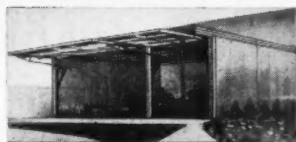
Pacific Gas & Electric Co., San Francisco, has announced plans for converting a depleted natural gas field into an underground storage tank. The field will give the firm 3,250,000,000 cu. ft. of storage.

The \$3,300,000 project includes the construction of a compressor plant and the laying of pipelines to connect the subterranean tank to the firm's main gas system.

DEAD YARD SPACE INTO WORK AREA IN HOURS...NOT DAYS...AT LOW COST



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EXPAND . . . PRODUCTION . . . SHOP AREA



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FACTORIES in the West are young, buying habits are being formed. Get your story across when it counts most—now, and in the competitive years ahead!

*Selling the West
is an 11-state job*



Covers it all!

...for more details, circle No. 111

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WESTERNERS AT WORK . . .

Crucible Steel Co.

... has appointed **Kenneth M. Acton** manager of its San Francisco sales branch. He served formerly as assistant manager



R. M. Simpson



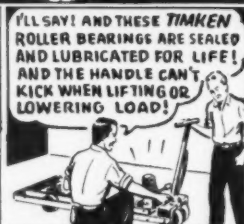
K. M. Acton

there. He replaces **Robert M. Simpson** who has been appointed manager of the firm's Los Angeles sales branch. Simpson was the former manager of the San Francisco office.

Hooker Electrochemical Co.

... has announced four new appointments in the Washington-British Columbia area.

George A. Gentes has been appointed works manager and **Robert M. Sherwin** plant engineer at the firm's Tacoma plant, while **Leslie H. Schnurstein** and **Laurence P. Hallahan** have been named production superintendent and plant engineer, respectively, for the firm's chlorine-caustic soda



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REVOLVATOR CO.

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plant now under construction in North Vancouver, B. C.

Four Slide Stamping & Manufacturing Co.



Charles Appling

Four Slide makes precision stampings and component parts for electronics and other precision manufacturers.

Arcadia Metal Products

... has named **William R. Mason** as production engineer. He will be responsible for research and development, product design, tooling, and complete product engineering. Mason came to Arcadia, manufacturers of aluminum and steel framed sliding glass doors, from the U. S. Naval Civil Engineering Research and Evaluation Laboratory at Port Hueneme, Calif.

U. S. Steel Corp.



James B. Black

advertising. He will headquarter in San Francisco.

Ralph T. Mitchell has succeeded Black as manager of sales in Denver. Senior sales representative for Columbia-Geneva in Los Angeles since 1948, Mitchell joined the division in 1940.

Chad W. McMills has been promoted to the position of assistant to the vice president, sales. He will be responsible for the general office sales staff phases of organization planning, personnel, sales training, expenses analysis, and office management.

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WESTERN INDUSTRY — June 1956

CLASSIFIED SECTION

Space is sold as advertisers' inches. All advertisements in this section are 1/8 inch short of contracted space to allow for borders and composition. Rates are \$9.00 a column inch. Copy should be sent in by the 25th of preceding month if proofs are required; by the 28th if no proofs are required.

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Weatherhead Co.

... has named **Edward R. Bate** as field engineer in the Northwest for the Fort Wayne division's industrial distributor division. Bate will represent the division in Oregon, Idaho, Wyoming, Montana, Washington, Colorado, Utah, northern Nevada, and northern California.

Miniature Precision Bearings, Inc.



Henry J. Egg

... has appointed **Henry J. Egg** Western manager. He replaces **Richard J. Kern**, who has been promoted to the newly created post of general marketing manager. Egg will have his headquarters at the company's Western branch in Goleta, Calif.

Ray W. Hawksley Co.

... Richmond, Calif., chemical engineering firm, has appointed **Vern E. Stiers** as sales engineer. He was formerly associated with Dearborn Chemical Co. Hawksley specializes in industrial water treatment and steam plant engineering.

Worthington Corp.

... has appointed **Charles D. Cummins** district manager of its Seattle office, succeeding **E. D. Schively**, who is on special assignment in Worthington's new Canadian operation. Cummins, formerly assistant district manager, joined the firm in 1925.

Lear, Inc.

... has appointed **Vernon B. Benfer** as division general manager for its Aircraft Engineering Division in Santa Monica, Calif. Benfer has been with Lear since 1950 and for the past three years has served as staff assistant to the president.

C & D Batteries

... has made **George E. Stephenson** its representative in the Phoenix-El Paso area. He will work out of Toncray Equipment Co., Denver agent for C & D.

Federal Pacific Electric Co.

... has appointed **Richard F. Gibbons** general manager of the Gardner Transformer Division in Emeryville, Calif. He was former manager of air switchgear engineering for the Pacific Switchgear Division, and has been with the company since 1930.

Rinshed-Mason Co.

... has employed **Russell E. Petersen** as its industrial sales manager, and **Arthur G. Grey** as aircraft finishes sales representative. **Roscoe F. Johnson** has been appointed as the firm's technical authority in the can coating field. Rinshed manufactures paints and coatings.

Roylyn, Inc.



H. E. Schroeder

Minneapolis-Honeywell Regulator Co.

... has appointed **John R. Lenox** general manager of the appliance controls division in Gardena, Calif. Formerly director of the ordnance and transistor divisions in Minneapolis, Lenox succeeds **E. M. Toussaint**, who has left the company.

Raymond S. Fries has been named to the

newly created position of factory manager of the Gardena plant. Fries has also been with the Minneapolis operation, serving as production official.

Bethlehem Pacific Coast Steel Corp.



J. L. Humphrey

... has promoted **J. L. Humphrey** from mill engineer at the firm's Seattle plant to manager of industrial fastener sales. He will be in charge of all fastener sales for Bethlehem Pacific in seven Western states. Before his position as mill engineer, Humphrey was production expeditor at the Seattle bolt and nut plant.

Cal-Tronics Corp.

... Los Angeles designer and manufacturer of electronic test equipment for radar fire control systems and guided missiles, has appointed **John F. O'Rourke** as director of operations. He was formerly test engineer with General Engineering Laboratory, test development engineer with General Electric Co., and chief of quality control engineering and planning at Hughes Aircraft.

Tide Water Associated Oil Co.

... has named **J. E. Roth** as administration vice president for production. He will headquarter in San Francisco and be responsible for planning and coordinating Tide Water production activities. He has been associated with the firm since 1924.

Rheem Automotive Co.

... has named **Howard Laurent** as chief engineer. He joined the Los Angeles firm in 1932 as a tool engineer and most recently was assistant to the chief engineer.

in the June 1956
WESTERN INDUSTRY

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Practical, Down-to-Earth Welding Rods
Alloys as they are supposed to be

Corrosion Resistant—
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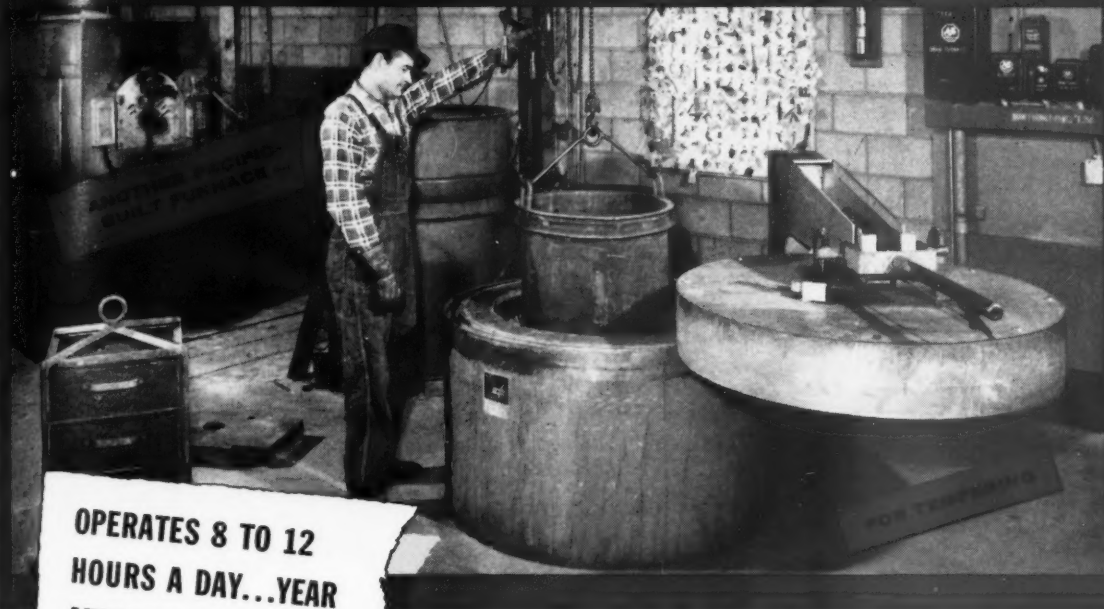
A. P. JOHNSTON CO., INC.
1845 E. 57th St., Los Angeles 58

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WESTERN INDUSTRY — June 1956

P

Pacific FLOODAIRE FURNACE MEETS ALL FOUR REQUIREMENTS OF PROFITABLE PERFORMANCE...



**OPERATES 8 TO 12
HOURS A DAY...YEAR
AFTER YEAR...WITH
NO MAINTENANCE...
for Holister Coil
Spring Manufacturing
Company!**

(TYPICAL FLOODAIRE PERFORMANCE
UNDER RUGGED CONDITIONS)

FOUR REQUIREMENTS ARE VITAL for the profitable operation of a heat treating furnace—and Holister Coil Spring Company found all four in their Pacific Pit Type Floodaire Furnace.

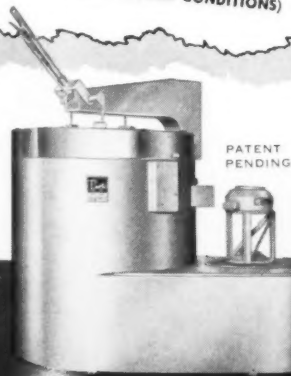
First, accuracy is essential—particularly in making springs which must perform to rigid customers' specifications. Here, the Floodaire is built to stay within $\pm 5^{\circ}\text{F}$. A recent government temperature survey at Holister showed *less than $\pm 2^{\circ}\text{F}$ variation!*

Speed is important to profitable performance, too. And Pacific's exclusive Floodaire design brings work up to heat fast, due to its unique element location and air circulation pattern. The high volume circulation of air also provides unusual heating uniformity.

Versatility...according to Holister, they can use the Floodaire for tempering or aging *anything* within its size range. This is another necessity when heat treating involves work which varies from load-to-load.

And of course, a furnace must be *trouble-free*—with no costly down-time or delays of customers' work. This Floodaire has been operating without a single service call for over two years—and with a full 8 to 12 hour shift every day!

This installation is typical of the performance of hundreds of Pacific-built furnaces for every type of job. (Another Pacific Furnace, a Shaker Hearth type, can be seen in the photo above.) Call or write today for details on a Pacific-built furnace for your exact needs!



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LOS ANGELES
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INDUSTRIAL HEAT TREATING EQUIPMENT

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☐ Please send me details on a Pacific Floodaire Furnace.

☐ Information on the full line of Pacific Heat Treating Equipment.

☐ Please have a Pacific Representative call.

Name

Company

Address

City State

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Saves \$50,000

30 years ago, before building a new plant, this company made a five year study of floor costs covering:

- initial cost
- cost of maintenance
- cost of repairs
- cost of production shut-downs due to floors

Here's How the Study was made:

- Test patches of 6 different types of industrial flooring were installed.
- Each section was subjected to all demands of the operation.
- All, save ONE, showed signs of deterioration beginning in the FIRST YEAR.
- After five years ALL, save ONE, had disintegrated.

Result:

400,000 square feet of the successful floor was laid in the new factory. That was 25 years ago!

What does this mean:

If one of the 5 unsuccessful floors had been put down without testing—then after five years—

A large portion of the 400,000 sq. ft. of the plant floor would have had to be resurfaced, PLUS, during the five years there would have been

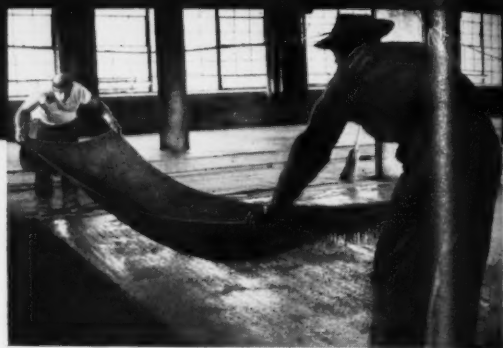
- excessive cost of maintenance
- danger to product because of "dusting"
- production interruptions because of floor repairs.

The plant management estimates that in the five 5-year periods, floor costs would have been in excess of \$200,000.

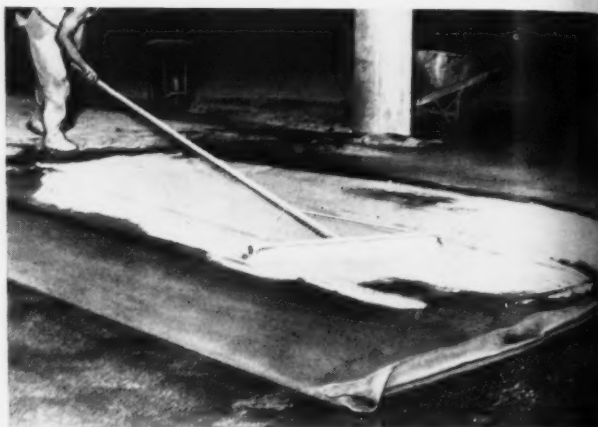


The successful floor* is still in excellent condition despite increased production, new, heavier, faster materials handling equipment, and plant modernization. And cost of maintenance? Less than 1¢ per sq. ft. per year.

KALMAN FLOOR COMPANY, INC.
110 East 42nd St., New York 17



1. Absorption blankets are placed on top of the freshly placed and screeded floor.



2. Kalman crews spread the drying mixture. This acts as a blotting agent and "sucks" up moisture below surface.



3.

After proper time has elapsed for obtaining proper water-cement ratio, blanket is removed. Topping now has achieved density to point where it can support weight of man.

For complete case histories write Kalman Floor Company, Inc., 110 East 42nd Street, New York 17, N. Y.

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CONCRETE FLOORS

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